HEADQUARTERS RESOURCE MANAGEMENT PLAN

for

Strengthening Sustainable Forest Management

2001-02

FOREST SERVICE
BRITISH COLUMBIA

6 Oct. 2000

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Introduction

The SSFM portion of the Headquarters Resource Management Plan (HRMP) recommends provincial / strategic level investments for meeting Forest Renewal BC's *Strengthening Sustainable Forest Management* strategic objective, for funding in the 2001/02 fiscal year and planning for investments through 2003/04. The sources of funding for these investments is primarily Forest Renewal but may include funds from other sources, including partnerships. Determination of HRMP priorities for this objective focused primarily on meeting Forest Renewal's targets as well as Resource management priorities developed through the RMP process.

Background

Forest Renewal BC is implementing a five-year strategic plan for 1999-2003. Under the plan, Forest Renewal's investments are targeted to helping BC move toward more sustainable forest management, and are organized around seven strategic objectives.

The *Strengthening Sustainable Forest Management* (SSFM) strategic objective is focused on increasing *knowledge*, *techniques* and *innovations* to strategically manage forests according to sustainable forest management principles. Under this objective, investments will be made in activities that improve strategic-level planning and decision-making processes. These processes include higher level plans (regional, subregional, forest-level management unit, and landscape-level plans) and decisions such as those reached under the Timber Supply Review.

Resource management planning (RMP), introduced in 1998, is a way to identify resource management priorities and link these with investment decisions and project selection. Regional RMPs for SSFM are currently under development in each of the six Forest Renewal regions and are due for completion by mid-October 2000.

This Headquarters Resource Management Plan (HRMP) is a new inter-agency planning process which replaces the HIP to identify issues and knowledge needed to improve sustainable forest management at the provincial-level as well as activities that are required to support regional strategies developed under the RMP process. The recommendations contained in this HRMP component will guide Forest Renewal in making HQ investments aimed at increasing the capacity of the BC forest sector to meet some of the challenges of sustainable forest management.

Strengthening Sustainable Forest Management Objective (SSFM)

The focus of Forest Renewal's SSFM strategic objective is to:

support the development of strategic resource planning and decision-making information and tools that are keyed to achieving sustainable forest management

Key Target

Forest Renewal BC's intention is to work with its partners to identify and address key knowledge needed for sustainable forest management. By April 1, 2004 key knowledge needs will be addressed to help improve strategic-level resource planning and decision-making processes.

What is Sustainable Forest Management?

Sustainable forest management (SFM) means looking at the forest ecosystem through an integrated set of variables. These variables *integrate* elements such as environmental benefits and value, socio-economic and cultural benefits, and forest health. Accepted principles and criteria of SFM paint a more specific picture, which includes management for biodiversity, soil and water conservation, global ecological cycles, multiple benefits to society, forest condition and ecosystem production, and First Nations and community participation.

What is Sustainable Forest Management (SFM)?

"SFM reflects a shift towards forest practices that integrate ecological and social concerns."

A strategy for SFM must reflect the following *objectives*:

- indefinitely satisfy needs for timber, fibre and non-timber forest products
- ensure conservation of soil and water
- sustain the resilience and renewal capacity of forests
- support the food security and livelihood needs of forest-dependent communities
- conserve biological diversity
- provide a more equitable sharing of the benefits from forest uses.

From the "World Commission on Forests and Sustainable Development," 1999

Building knowledge is a key strategy for improving decisions and informing actions directed towards achieving SFM in BC. It is particularly important for strategic processes such as Land and Resource Management Plans (LRMPs) and the provincial Timber

Supply Review (TSR), as well as contributing to other challenges facing management of forest lands in BC in the journey to sustainability.

The intent of the SSFM Objective of the HRMP is to identify and prioritize investment strategies and specific projects to meet the key provincial-level issues and knowledge requirements for SFM.

Process for Development of HRMP Recommendations

The process for development of the SSFM portion of the HRMP was designed to be consistent with Forest Renewal guidelines, ground rules and principles for partner involvement. This document reflects a process of *working in partnership* to identify and address key knowledge needed for sustainable forest management. Partners in the process include: Forest Renewal BC, MoF, MELP and BC Fisheries. The following provides an overview of the process, limitations and future recommendations related to development of this HRMP.

Process

MoF, MELP and BC Fisheries, as stewardship agencies, jointly coordinated the development of this HRMP. A group of "Champions" was established to guide and coordinate the process (membership: Dave Gilbert, MoF; Fern Schultz, MELP; Peter Lewis, BC Fisheries). Identification and prioritization of significant provincial SSFM issues and knowledge needs was then carried out as follows.

A planning workshop was held in August 22, 2000 for preliminary identification of the most significant provincial issues. SSFM and C&I issues and knowledge needs identified for the Forest Renewal Research Program served as a starting point for these discussions. From this, four primary issues or component areas were identified. Further consultation and refinement for each component was coordinated by a component leader and was carried out through consultation with peer groups (i.e. those relevant to each component area) and component working groups with representation from partner groups and others with relevant technical expertise. Component leaders and peer groups are identified for each component in the HRMP Guidelines located at:

http://www.for.gov.bc.ca/CPP/rmpguidelines/guidelines.htm.

Visions and strategies for each component area were developed (details of these are provided in the following section). Proposals for projects were then solicited to meet the needs identified within each component. Submitted projects were then coordinated and reviewed by component working groups. Finally, identification of linkages and possible overlaps between components was carried out by the working groups.

Limitations

Specific limitations in the development of the HRMP for SSFM relate to timing and scope. Due to the fact that the final regional RMPs were unavailable at the time of preparation of this document, it was not possible to fully incorporate their recommendations on knowledge priorities that should be considered at the provincial level. As they become available further review and coordination will be carried out.

Discussions of the component working groups indicate that additional consultation and review of a broader range of current work by current provincial sustainable forest management initiatives is needed to confirm the priorities of the component areas and to more fully develop the component strategies.

Recommendations

The RMP process, in regions and in headquarters, must be ongoing. The process for 01 / 02 reflects the changing focus for Forest Renewal BC and constraints in time and existing FRBC commitments limit the degree to which the targets for the new objective have been able to be addressed.

For SSFM, additional work should be undertaken on elaborating the components by addressing gaps missed this year with specific consideration given to the following:

- Consideration for how to link directly to State of the Forests and Environment Trends Report indicators, so there is direct convergence and applicability. This includes attention to the indicators/information necessary to address the concerns from international audiences.
- Integration of LRMP Monitoring Committee workings, including the indicators identified in the initial Plan and future indicators/info needs identified through the ongoing public participation working groups.
- Incorporation of the information gaps (inventory, assessments) identified by forest certification reviews, reports and audits.
- Expand review of existing work on SFM criteria and indicators to within North America, including current US initiatives

Further work is also required to strengthen the links between components as well as with the other FRBC strategic objectives

Performance Evaluation

Performance for this objective will be evaluated as per the performance measures provided by Forest Renewal. They have defined the key target for this objective as:

To work with partners to identify and address key knowledge needs for sustainable forest management. By April 1, 2004 key knowledge needs will be addressed to help improve future TSRs and implementation of strategic land use plans.

In order to assess progress toward meeting this target, Forest Renewal will use indicators that describe how knowledge needs for key SFM issues were established and how well these needs were addressed. Assessments will determine how well the following requirements have been met:

- working in partnership to identify key SFM issues
- clarifying what needs to be done to address these issues and targeting knowledge investments strategically to link with decisions and strategic- plan implementation
- developing measures of success and performance indicators for investments related to each specific issue
- monitoring these indicators and evaluating benefits of investments, i.e., is there evidence that new information and tools are being used in strategic plans and decisions to address key SFM issues?

Key Performance Measures

Forest Renewal BC has established three key performance measures:

1) *The quality of the HRMP process and product* (which is the mechanism for identifying key issues and knowledge needs). A key requirement is the identification of performance indicators and annual milestones to track progress toward addressing issues.

2) *The existence of an effective monitoring and evaluation process for SSFM investments*. By March 31, 2002, surveys conducted by Forest Renewal will show that the performance of SSFM investments is being routinely monitored and evaluated.

3) *The usefulness of the investments themselves, as judged on the basis of achievement of the indicators and milestones documented in the HRMP.* By March 31, 2004, surveys conducted by Forest Renewal will show that 70% of the SSFM investments to-date have been judged to be relevant, usable and timely with respect to key strategic issues and decisions.

Plan for Monitoring Progress and Benefits

For the year 2001/02 the SSFM HRMP and its associated projects will be measured according to Forest Renewal's three key performance measures outlined above with a focus on measure #1 – the quality of the HRMP process and product. Progress toward meeting Forest Renewal objectives and target will be monitored by component leaders and an interagency HRMP steering committee.

105-06240/

Recommendations for SSFM HRMP Investments

Overall Vision

The vision for HRMP SSFM investments is:

To support the development of provincial level knowledge required to reduce risk and uncertainty in forest level management and decisions affecting the maintenance of environmental values and the sustainability of timber and non-timber resource benefits from the forests, thereby improving the ability of BC to meet the requirements of sustainable forest management.

Key Provincial SSFM Issues and Knowledge Needs

Investment recommendations for SSFM are based on an identification of significant SFM issues, facing the province at this time, which can be addressed through improved **knowledge**. The HRMP planning process identified a number of key provincial SSFM issues and associated knowledge needs. Of those, it was determined that the highest priority at the provincial level was to develop better knowledge in four fundamental areas.

- Criteria and Indicators for Sustainability
- Environmental Baselines
- Sustainable Resource Benefits
- Access to Information

Each of these component areas will contribute a necessary piece of the sustainable forest management puzzle. The first three are interconnected and somewhat sequential. Improved knowledge in these component areas is considered essential for reducing the levels of risk and uncertainty in forest level management and decisions, thereby ensuring the maintenance of environmental values and sustainable timber and non-timber resource benefits from the forest – critical elements of the Forest Renewal SSFM objective.

The fourth component, Access to Information, was identified as an overarching area of need for ensuring that BC's higher level plans and decisions meet the principles of sustainable forest management. This component is critical for making the most effective use of existing information and for maintaining transparent and accessible resource planning and decision-making.

All four of the components are designed to support the Forest Renewal SSFM strategic objective and target in that they are aimed at generating knowledge to create more informed decision-making in higher level planning and decision processes which adheres to principles of sustainable forest management.

The HRMP SSFM planning group considers this to be a preliminary identification of needs and priorities, which could be improved through a broader review of existing work in future. The time constraints of the present planning cycle have limited the review of provincial SFM initiatives and documents. An ongoing planning process is needed to more fully develop the issue groups and associated knowledge enhancement strategies, and to review and incorporate the recommendations from the regional RMPs and thus ensure effective coordination of provincial-level needs.

The following provides a brief description of the four issues or component areas and a rationale for how addressing each issue area will meet Forest Renewal's SSFM objective.

Description and Rationale for Indicators for Sustainability Component

BC is committed to moving towards practical application of SFM that requires clear articulation of associated criteria and indicators at a provincial level. Criteria and indicators (C&I) that characterise SFM must be based on the best available scientific knowledge and receive international acceptance. The six criteria for SFM identified in the 1992 Canadian National Forest Strategy (NFS) relate to biodiversity; forest condition and ecosystem productivity; soil and water conservation; global ecological cycles; multiple benefits to society; and accepting society's responsibility for sustainable development.

Criteria and indicators are important inputs to strategic planning processes, both in an absolute sense by representing existing conditions, and in a relative sense by enabling reliable comparison between different areas. Enhancing knowledge of a range of criteria and indicators will support strategic planning decisions and enable effectiveness monitoring.

The working group has identified a need to develop or improve C&I in the following fields:

- *biodiversity:* better biodiversity indicators at different temporal and spatial scales;
- *soil*: better site-specific soil biology and condition indicators, including thresholds for management action in relation to disturbance;
- *water*: better water & watershed condition indicators and thresholds for management;
- *ecosystems*: better indicators and earl-warning signs of ecosystem stress, and approaches to determining indicators of ecosystem resilience;
- *socio-economic*: identification of processes to develop 'scale-appropriate' socio-economic sustainability indicators, and;
- *First Nations*: better indicators of First Nations involvement in SFM planning processes and development of sustainability indicators.

Investments in this component area will meet Forest Renewal's strategic objective by providing the foundation for incorporating SFM criteria into high level planning and decisions. It will also enable the monitoring and evaluation of benefits and costs of a given management decision in terms of environmental values and timber and non-timber resource benefits.

In addition, the development of criteria and indicators for SFM in BC is closely linked to the ongoing move to establish regional forest certification standards.

Description and Rationale for Environmental Baselines Component

The Environmental Baselines component addresses the need for baseline information in relation to the indicators of sustainability. These indicators rely on data gained from repeat measurements of selected environmental parameters. There is currently a wealth of relevant data - and data collection systems - in BC but this requires collation, organisation and review to determine coverage and gaps with respect to the selected indicators, and thereby the most cost-effective methods of filling data needs for tracking progress towards / implementation of SFM.

Comprehensive environmental baselines will support a range of monitoring activities required for sustainable forest management and will be used in State of Forests and Environment reporting, monitoring the effectiveness of land use plans and targets, outcomes from various investments, and certification requirements.

Investments in this area meet Forest Renewal's objective by improving environmental baseline information which is used to confirm or modify strategic plans and decisions and provides support for certification initiatives. Improving baseline data and the ability to use this information will ensure more effective SLUP and LRMP outcome monitoring which is directly targeted under the SSFM objective.

Description and Rationale for Sustainable Resource Benefits Component

The sustainability of resource benefits, in their widest sense, is at the heart of SFM and forest certification. Moving towards inclusion of *all* timber and non-timber values in strategic decision-making is critical to ensuring a sustainable flow of both timber and non-timber resource benefits from the forest. This requires improved tools to model the effects of forestry management actions that are able to incorporate and analyse socio-economic and environmental values and benefits as well as more traditional resource values.

Investments in this area fulfil one of Forest Renewal's key targets for this objective which is to support the integration of ecological and socio-economic concerns in forest management decisions and planning.

Description and Rationale for Access to Information Component

The quality of decision-making rests squarely on the quality of the information available to decision-makers, participating stakeholders, and the public. Working groups indicate that improvements are needed in two major inter-connected areas - the organisation and management of information, and access to it:

- *information access*: awareness of existing natural resource information, systems for inter-agency information sharing, integrated decision-support modelling and monitoring systems
- *information management*: data standards and protocols, information archiving and retrieval, collections and cataloguing, institutional capacity for information management, and corporate information management cultures in the natural resources sector

Investments in this component area directly addresses Forest Renewal's strategic objective by improving use of existing information in strategic level plans and decisions as well as increasing the accessibility of forest resources information to the public. Tools to improve access to and use of the abundant amount of forest resources inventory work that exists on a province-wide as well as regional basis (much of which has been funded by Forest Renewal) will allow all Forest Renewal partner groups to more effectively use the information to meet all of Forest Renewal's strategic objectives.

Detailed Description of Components

The following sections summarize the vision, strategies and project proposals for each component area of SSFM. Each of the four issue groups comprises a *component* of the HRMP strategy to fill SSFM knowledge gaps. **The Growth and Yield / Forest Productivity Component was previously housed under the SH Strategic Objective, but was moved to the SSFM Strategic Objective to better fit FRBC's funding envelopes and reporting structure**.

Eligibility

The recommendations in this HRMP have been developed to meet the general eligibility guidelines and assumptions provided by Forest Renewal BC. By applying eligibility criteria (see below) that are specific to Forest Renewal BC investments, projects have been identified that are eligible for FRBC funding. Further clarification will improve the process for determining HRMP eligibility in subsequent years.

Eligible Activities

Eligible activities under the SSFM objective are defined by Forest Renewal BC as follows:

In the past regional planning has been focused on field inventories. SSFM signals a shift to the identification of the broader range of eligible activities needed to link information to strategic planning and decision-making:

- *analysis and organisation of existing information (e.g., tools, decision support)*
- *improved access to – and understanding of – existing information (e.g., extension, inventory of inventories, frameworks)*
- *generation of new information and knowledge (e.g., field inventory, research)*[1]
- *information and tools to support monitoring of the outcomes of plans and decisions.*

Investment opportunities that can be recommended to Forest Renewal BC for SSFM funding in Resource Management Plans will be limited to:

- *activities which are compatible with the standard steps and components of the TSR process and/or the* ***implementation***[2] *of strategic land use plans and which will have a high likelihood of being used in these decisions/plans*
- *knowledge activities that focus specifically on forest resource management*
- *activities that are incremental to the tasks normally undertaken by government agencies or licensees in typical or standard strategic-planning and TSR decision processes*

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[1] May be problem analyses, research to address a specific science-based question, comparative studies, experimental development of operational applications.

[2] Knowledge needs related to the **development** of strategic land use plans are planned and funded through CLUPE.

Criteria and Indicators for Sustainability Component

Vision

The vision for this component is:

> *To support and facilitate strategic forest planning processes, certification, and provincial state of the forest and environment reporting, including assessment of global environmental change, by developing a complete and consistent set of criteria and indicators for sustainability - including indicators for biodiversity, terrestrial and aquatic ecosystem condition, terrain stability and water/water quality - that both assist with and take advantage of work at the local level.*

This component is essential if Forest Renewal BC is to meet its Strengthening Sustainable Forest Management strategic objective. The projects in this component will develop specific tools needed for measuring sustainability, and thus for achieving SFM. The component will also develop knowledge which will contribute towards the strategic objectives of Sustainable Harvest and Enhancement of Environmental Values.

This component satisfies all of the eligibility criteria, performance targets and linkage requirements as follows:

1. Activities under this component will directly support implementation of provincial higher-level planning processes, including landscape unit planning, by providing information and tools not currently available to decision-makers. This component will:

- Review all existing provincial and local work on criteria and indicators for sustainable forest management in British Columbia and relevant work from elsewhere in North America
- Evaluate each indicator for its effectiveness in recognizing and characterizing the environmental changes that result from specific management actions
- Complete a gap analysis to identify and define missing and/or inadequate indicators
- Modify or develop new data collection and monitoring standards, data models and analytical tools as necessary to enable implementation of approved C&I system
- Develop training packages for C&I users

2. This component complements and facilitates regional investments by providing provincial indicators and establishes a framework within which regional indicators can operate.

3. This component is incremental to the Ministries' mandates, existing programs and policy by virtue of it being a new initiative.

4. Time-bound deliverables and performance measures are defined in the attached list of recommended projects.

5. The planning process for this component, under MELP leadership, involves a peer group comprised of the BC Forest Resources Inventory Council (FRIC), BC Forest Productivity Council (FPC), and Canadian Forest Inventory Committee (CFIC).

6. Partners in implementation of this component will be Forest Renewal BC, MoF, MELP, BC Fisheries, and regional SSFM planning groups.

7. This component is closely linked to the other components in the HRMP SSFM program, in particular to the development of better tools and information relating to indicators developed under Environmental Baselines and to subsequent inputs into forest estate and other decision-support models developed under Sustainable Resource Benefits. C & I deliverables will also contribute to planning for achievement of the Sustainable Harvest and Enhancing Environmental Values Strategic Objectives. Specific linkages to other RMP and HRMP components are identified in individual project descriptions.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: Indicators of Fish Sustainability in Forest Environments

Originators:

Name(s): D. Tredger, A. Tautz
Organization: BC Fisheries
Telephone: 387-9588
Fax: 356-1202
E-mail Address: Dave.Tredger@gems4.gov.bc.ca

Project Summary

This project will review, develop and test indicators of fish and fish habitat sustainability. The project will focus on three related subject areas:

- Defining methods and criteria for assessing land use impacts on fish and fish habitat
- Providing indicators of the status of commercially important fish populations and their habitats
- Providing indicators of ecosystem health and fish biodiversity values by focusing on non-commercial species and/or species at risk

This project will set the foundation for defining the fish and fish habitat component of a system for monitoring biological diversity, ecosystem condition and multiple benefits to society. The project will also provide methods for forest licensees to monitor and report on sustainable forest management for other purposes (e.g. certification, softwood lumber, DFO).

Status

New

Project Details:

Background:

Indicators of fish sustainability in forest ecosystems must cover watershed health, fish productivity, habitat productivity, water quality and water quantity at appropriate scales. Work to define fish and fish habitat indicators has been ongoing, through workshops sponsored by the Pacific Northwest Environmental Indicators Working Group[1] and the governments of B.C. and Canada regarding the implementation of the Canada-B.C. Agreement on the Management of Pacific Salmon Fishery Issues[2].

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[1] Toward "A Small, but Powerful" Set of Regional Salmon Habitat Indicators for the Pacific Northwest. Green Mountain Institute. Feb 1998

[2] Salmon Habitat Indicators and Data Sharing Workshop. Eclipse Environmental Consulting. Sept. 1998

In addition, considerable effort within government has been devoted to the collection of information to be used in assessment procedures. While much of this data may have considerable value in a particular context and at a particular scale, more work needs to be done if a credible and defensible methodology for impact assessment is to evolve that is supported by key government agencies and the scientific community. Work is needed to review and select appropriate indicators at the appropriate scales, and to implement the collection and management of information on the indicators. Also, it is very important that these methods anticipate the improved availability of new data through the data systems such as ISIS and INCOSADA and current forest cover and satellite images.

Objectives:
This project will review work done to date on fish and fish habitat indicators to select and implement scale appropriate indicators consistent with the Canadian Council of Forest Ministers criteria and indicators.

a) Land Use Thresholds for Monitoring Impacts
Watershed/regional scale indicators include (e.g.) land use, land cover, road densities and watershed characteristics. Watershed Assessment Procedures developed for the Forest Practices Code used these types of indicators to identify potential for habitat impacts. Indicators at this level need review, data sources and collection standards confirmed, and biases and limitations understood. Threshold values need to be defined that will trigger the need for more detailed monitoring efforts.

b) Indicators of Managed Fish Population and Habitat Status
Managed fish include those important for commercial and recreational purposes. Indicators for managed fish center around trends in population size and on the amount and condition of the habitats on which they depend. This project will develop tools to enable implementation including development of RIC approved methods, standards and sampling frameworks.

c) Indicators of Fish Species at Risk Status and Sensitivity
The development of biodiversity indicators for non-commercial species is a significantly different problem than the development of methods associated with commercial and recreational species. Typically, there is no trend information and there are no consistent sampling procedures in place. Therefore, the development of statistical approaches that use data collected for other purposes (e.g. habitat information in the watershed atlas) combined with life history data and legacy collections will play a much greater role in establishing the status of these species. Emphasis on keystone species, both in terms of selection and linkages with data sets for other species will form an important part of the methodology.

Since it is impractical to sample all species in all locations, data associated with FISS and the watershed atlas will be an important component of the design of any field sampling based monitoring program.

Scope: regional; provincial

Clients: BCFisheries, MELP, DFO, Ministry of Forests and Forest Licensees.

Decision/Ministry objectives supported:
Protect and rehabilitate native fish populations; Protect and rehabilitate habitat to conserve the productive capacity of aquatic ecosystems.

Deliverables:

1. A suite of indicators of ecosystem stress and threshold values to trigger monitoring.
2. A framework including data collection standards and analysis tools for monitoring the status of populations and habitats of managed fish species.
3. A framework including data collection standards and analysis tools for monitoring the status of fish species at risk.

Partners/Linkages:

Linkages and partnerships will be pursued with custodians of data essential to monitoring fish and fish habitat sustainability, including DFO, Environment Canada, MELP Resources Inventory Branch, Geographic Data B.C. and the Ministry of Forests. This project has clear linkages to the emerging Watershed Fish Sustainability Planning initiative being developed under the Canada-B.C. Fisheries Agreement.

Consequence of Not Funding:

Scale appropriate methods for monitoring the sustainability of fish will not be applied in a consistent manner. It will remain difficult to roll up individual fish stock and habitat assessment programs to gain a provincial view.

Timing Constraints:

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		155,000	220,000	160,000	535,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Review of Indicators of Sustainable Forests

Name(s): Risa Smith, Head, State of Environment Reporting
Organization: MELP
Telephone & Fax: 356-2191;387-8894
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Project Summary

There is currently a proliferation of work on environmental indicators in general as well as sustainable forest indicators, at the community, watershed, provincial, national and international levels. Data has already been rolled up to support sustainable forestry indicators and is being reported on by many organizations both inside the provincial government (e.g. MELP, LUCO, MOF) and outside the provincial government (e.g.World Resources Institute, Natural Resources Canada, World Wildlife Fund, Industry Environment Reports). This project will investigate the extent to which sustainable forests indicators are already being used by organizations both inside and outside the provincial government and analyze how those indicators currently portray BC forests. It is expected that some indicators will present a similar portray of sustainable forests in BC and others will portray a confusing and conflicting picture of BCs forests. This analysis will serve to coordinate efforts at different scales in BC and to allow for resolution of data issues where conflicting information is presented.

This supports the SSFM targets, under Criteria and Indicators for Sustainability, to review existing work on criteria and indicators for sustainable forest management, evaluate effectiveness of indicators, identify missing and inadequate indicators.

Status

New

Project Details:

Background: The credibility of indicator work on sustainable forests in BC must be informed by the work being done in this area by others. Positive trends portrayed by the BC government will have little credibility if they stand juxtaposed to negative trends portrayed by other organizations. As well, in the interests of efficiency, the government would be wise to incorporate the considerable work conducted by other organizations, including identification of gaps in knowledge and data required to support sustainable indicators work.

Objectives: To review published information on sustainable forest indicators. To analyze this information for compatible and conflicting portrayals of sustainable forests in BC. To provide recommendations on data and monitoring needs to resolve conflicting information.

Scope: Community, provincial, national, international

Clients: MELP, MOF

Decision/Ministry objectives supported: Supports MELP biodiversity objectives and environmental reporting objectives.

Outputs to date if continuing: N/A

Deliverables:

Review on use of sustainable forestry indicators which are being used to portray the extent to which forests are sustainable in BC. Review will compare the way different organizations portray forests in the province.

Recommendations on data and monitoring needs to resolve conflicting indicator information on sustainable forest indicators

Partners/Linkages:

Links to information needs for sustainable forestry, and particularly biodiversity indicators, for MELPs *Environmental Trends in British Columbia.* Will provide background information for *State of the Parks* report, *State of the Forests Report* and MELPs regional watershed studies, as well as *Effectiveness Monitoring Reports by LUCO.*

Consequence of Not Funding:

Risk that credibility of sustainable forests indicator work by the BC government will be undermined by conflicting information put out by different organizations within the government and, equally importantly, conflicting indicator information released by other organizations.

Timing Constraints:

In order to be incorporated into ongoing reports this will have to commence by April 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		50,000	10,000		60,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Climate Change Indicators for Forests

Originators:

Name(s): Risa Smith Organization: MELP
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Project Summary

This project will assess the considerable amount of technical information already collected on the impacts of climate change on BCs forests and the importance of BCs forests as carbon sinks and turn them into indicators for two documents, the MELP report *Environmental Trends in British Columbia 2002* and the Canadian Council of Ministers of the Environment report, *Climate Change Indicators for Canada*, draft expected for September 2001.

Status

New

Project Details:

Background: Several predictive models have been developed over the past 10-years which predict both the impacts of climate change on BC's forests and the importance of BCs forests as carbon sinks. These efforts to date have been highly technical and inaccessible to the public and decision-makers. This project will examine this technical material and use it as the basis for a small suite of climate change indicators and BC's forests. These indicators will follow two themes -- one concerned with the potential costs to the forests from climate change; the other concerned with the benefits to the atmosphere from carbon sequestered by BCs forests.

Objectives To develop a small suite of indicators which depict the relationship between BCs forests and climate change. These indicators will be incorporated into *the CCME Climate Change Indicators for Canada* report as well MELPs publication *Environmental Trends in British Columbia 2002.*

Scope : provincial

Clients: CCME, MELP, Green Economy Initiative

Decision/Ministry objectives supported: supports MELPs strategic objectives in the Climate Change Business Plan.. Supports FRBC SSFM Criteria and Indicators for Sustainability Component.–

Outputs to date if continuing: N/A

Deliverables:

Review of the technical information developed to date - by September 2001
Develop of indicators – by December 2001
Release of indicators in *Environmental Trends in British Columbia 2002* (April 2002)
Climate Change Indicators for Canada – (September 2002)

Partners/Linkages:

CCME has committed $100,000 and Environment Canada $25,000 to the development of climate change indicators for Canada. The State of Environment Reporting Office of MELP represents BC in this national level project and will ensure that this information is used for the national report. As well, the province has committed $50,000 to develop a document "Climate Change Indicators for British Columbia". This project is currently in progress and being managed by the MELPs State of Environment office. The first draft of the BC climate change indicators, and the technical background documents, will be ready by March, 31, 2001. The FRBC money will be used to add a forests component to the BC document.

Consequence of Not Funding:

The impacts on BC's forests and the role of BC's forests in climate change policy will not be highlighted in the national report or in the provincial report, without additional FRBC funding to include this component. Both the provincial and national documents will likely receive considerable public attention.

Timing Constraints:

Constrained by the CCME process – draft indicators to be developed by September 2001 and the final report currently scheduled for completion September 2002. Constrained by BC process, which will already have a draft of the non-forest indicators by March, 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
	$175,000	$30,000			$30,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Update of Hydrometric and Automated Water Quality Manuals

Originators:

Name(s): George Butcher
Organization: Water Inventory Section, RIB
Telephone: 387-9515; FAX 356-5496
E-mail Address: george.butcher@gems7.gov.bc.ca

Project Summary

Revision of the Manual of Hydrometric Surveys in BC and the Automated Water Quality Monitoring Field Manual to conform to requirements and format of WIDM database. Users of these standards require updated information currently lacking in the present versions. This modification of monitoring standards contributes to the strategic objective of Forest Renewal of providing quality data to support forest management decisions.

Status: continuing

Project Details:

Background: The manual of RIC standards for hydrometric surveys in BC was completed in November, 1998. The manual of RIC standards for automated water quality monitoring was completed in June, 1999. Changes in technology and the development of the new WIDM database have necessitated revisions to these standards (to the extent that errata are not feasible)..

Objectives: Revision to the hydrometric manual will include a new section on DCP's (dataloggers), telemetry, WIDM user directions, revisions to discharge measurement calculation spreadsheet or translation of Oracle forms to a field usable format and various corrections to meet revised national and international standards. The automated water quality monitoring manual will be revised to include new RIC field forms, a new section on QA/QC, new sections on automated data assessment techniques and improvements identified by users.

Scope: provincial

Clients: ***consultants to industry, MoF and MELP staff, NGO's***

Decision/Ministry objectives supported: Supports the collection of quality water resource data for input to decision-makers.

Outputs to date:

Manual of Standard Operating Procedures for Hydrometric Surveys in BC (1998)

Automated Water Quality Monitoring Field Manual (1999)
Guidelines for Automated Water Quality Monitoring Equipment (1997)
Data Approval Guidelines for Automated Water Quality Monitoring (1998)

Deliverables:

Completion of Hydrometric Manual	Dec. 2001
Completion of Automated WQ Monitoring Field Manual	Mar. 2002

Partners/Linkages:

The revisions to the manuals is linked to the FRBC-funded WIDM database, to the data requirements of the Watershed Assessment Procedures and to the setting of water quality objectives in Community Watersheds.

Consequence of Not Funding:

Degradation of data quality.

Timing Constraints:

Required for WIDM implementation.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget Jan.15/01			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$25,000.00			$25,000.00

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Certified Approver of Hydrometric Data

Originators:

Name(s): George Butcher Organization: Water Inventory Section,
RIB
Telephone: 387-9515; FAX 356-5496 E-mail Address:
george.butcher@gems7.gov.bc.ca

Project Summary

This project will develop a testing procedure for applicants to be certified as provincial Approvers of Hydrometric Data and a mechanism to manage and enforce the certification process.

Status

Continuing – this will fulfill the requirements for Certified Approvers of Hydrometric Data as laid out in the FRBC funded WIDM database and the FRBC funded RIC Manual of Hydrometric Surveys in BC

Project Details:

Background: Recommendations on the qualifications required for persons reviewing and classifying hydrometric survey data for inclusion in the provincial database (WIDM) were outlined in an FRBC-funded report "Qualifications for Certified Reviewers for RIC Standard Hydrometric Survey Data". A process is required to identify and validate individuals who apply to carry out the review and classification of hydrometric data.

Objectives:

- develop tests
- determine delivery process for testing
- arrange for certification and review body

Scope: - provincial

Clients: MoF, MELP staff, industry, consultants.

Decision/Ministry objectives supported:

Data Quality – this project will ensure that FRBC funded hydrometric data gathered and compiled by staff and industry consultants is reviewed for database inclusion by individuals with high levels of practical experience and theoretical knowledge.

Outputs to date if continuing: *1)RIC Manual of Hydrometric Surveys in BC. 2) Qualifications for Certified Approver for RIC Standard Hydrometric Survey Data, 3) RIC Hydrometric Surveys Training Course*

Deliverables:

1) Sept. 2001 Test development and determination of delivery process
2) Dec. 2001 Completion of arrangements for certification body to assume role

Partners/Linkages:

Partner - ASTTBC (Applied Science Technologists & Technicians of BC)
This project links to the FRBC-funded WIDM database and the requirements of the RIC Manual of Hydrometric Surveys in BC.

Consequence of Not Funding:

Hydrometric data placed in the WIDM database will be of uncertain quality.

Timing Constraints:

Approval of data will be delayed until the certification process is in place.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		**Proposed Budget Jan.15/01**			**Total Proposed**
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$70,000		**$15,000**	0	0	$15,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: **Benthic Indicators Inventory Standards & Analytical Tools**

Originator:

Name(s): George Butcher
Organization: Water Inventory Section, RIB
Telephone: 387-9515; FAX 356-5496
E-mail Address: george.butcher@gems7.gov.bc.ca

Project Summary

This project will fill a gap in our set of indicators for forest ecosystem sustainability by:

- Completing a RIC standard for benthic invertebrate data collection
- Reviewing and testing benthic invertebrate analytical tools (multimetric indices such as the Index of Biotic Integrity, Functional Feeding Groups)
- Establishing a RIC standard for benthic invertebrate indicator assessment.

The development of this new too will address key knowledge gaps to help improve future TSR's and LRMP's and will provide input to state of forest and environment reporting.

Status: new

Project Details:

Background: Benthic invertebrate indicators and analytical tools are needed to complement existing water chemistry and habitat assessment tools. Benthic invertebrate indicators focus directly on what is at risk in forest streams – biological systems – and are less likely to underprotect aquatic systems or waste resources. There are several approaches in use in other jurisdictions which require examination and calibration for use in BC, e.g. the Benthic Index of Biotic Integrity (B-IBI) integrates a number of biological metrics to assess the condition of the aquatic ecosystem; and Functional Feeding Groups analysis has shown utility in tracking the effects of forestry activities.

Objectives:

- Completion of a RIC standard for benthic invertebrate data inventory including protocols collection, preservation, and archiving .
- Testing utility of B-IBI by calibrating the index for one ecoregion.
- Completion of a RIC standard for benthic invertebrate indicator assessment including B-IBI development.
- Development of a RIC training curriculum (with pilot training course) for benthic invertebrate data collection and metric analysis.

Scope: provincial
Clients: MELP, NGO's, industry consultants.

Decision/Ministry objectives supported: *Provides biological indicators of forest stream condition for state of forest and environment reporting. Creates the foundation for numeric biological criteria to measure sustainability and global environmental change.*

Deliverables:

RIC Standard for Data Collection	Mar. 2002
1st Draft RIC Standard for BI Assessment	Mar. 2002
Final Draft RIC Standard for BI Assessment	Sept. 2002
Pilot calibration of B-IBI	Dec. .2002
BI Training Curriculum	Mar. 2003

Partners/Linkages:

- Linked to FRBC-funded water quality objectives setting for Community Watersheds.
- MELP regions; also pursuing partnerships with Federal government and US agencies.

Consequence of Not Funding:

- This is an opportunity to provide data that directly measures the biological condition of logged watersheds. Without these data, we must rely on traditional water chemistry and physical habitat measures which are indirect measures.

Timing Constraints:

NA

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget Jan.15/01			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$60,000	$90,000.		$150,000.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: On-line Education

Originators:

Name: Bruce Pendergast/Rick Thomas Organization: Resources Inventory Branch
Telephone (250) 356-026 Fax: (250) 387-2733
E-mail Address: rick.thomas@gems4.gov.bc.ca

Project Summary

The RIC wildlife training program has been only partially successful because Regional staff and contractors have found the Wildlife RIC training courses costly in terms of time and funds and have made many complaints. This proposal would move courses to on line self-training (pilot for all RIC courses). Some aspects such as field techniques may still require on site training.

It is mandatory that regional staff members as well as licensees are educated in the RIC methods, to reduce costs of quality assurance, and audit of FRBC funded and other inventories.

The Resources Inventory Branch Extension and Training Initiative is:

- to promote quality partnerships between government and licensees by providing accessible on-line training towards certification for professionals in the RIC methods;
- to promote fairness in the selection criteria of FRBC funded Inventory RFPs;
- to address the Headquarters Investment Plans and Regional Resource Management Plans and improve quality assurance of FRBC inventories in the province;
- promote understanding of resource inventories through education;
- to reduce the cost implications of substandard inventories; and
- assist other government agencies in placing their RIC courses on-line.

Status - New

Project Details:

- To ensure consistent application of Resource Inventory Committee (RIC) methods, a decision by RIC now requires individuals to prove competence before applying some of these methods. This requires:
- proving competence in applying the associated RIC standard is mandatory. There are only two methods for proving competence: Successful completion of a RIC training course, or Successfully completing a challenge process; and
- individual RIC task forces will determine the appropriate challenge process, if any, for each of their courses. The testing competency component of the

challenge process must be at least as rigorous as the competency evaluation within the RIC training course.

Project Objectives:

- To promote quality partnerships between government and licensees by providing free access to Resources Inventory Committee (RIC) course material through the Internet and implement a challenge program for certification in all the Inventories;
- to support the Forestry Continuing Studies Network in the certification records and certificate production and distribution; and
- to improve the quality assurance of FRBC inventories in the province by upgrading staff who do the QA;

Clients and Scope:

Professionals in government and the private sector contracted or employed now and in the future who are in the data gathering and monitoring of resource inventories.

Outputs to date if continuing:

Hundreds of professionals (some certified in many methods) are certified in the RIC methods.
This type of training is incremental to base programs.

Deliverables to be completed by March 2004:

- The curriculum modules for all Wildlife Inventory and Analysis Section RIC methods courses will be placed on-line and can be downloaded for free or ordered from the Queens Printers for a fee.
- Instructors' manuals can be ordered but only from the Extension and Training co-ordinators as they contain specific information about exams
- Strategic Provincial Government offices across British Columbia will be designated sites to offer challenge exams twice a year. If FSCN is still under contract with the government they will carry out this responsibility. Only Provincial Government staff will mark exams.
- FSCN will be the repository of certification information.
- Field components of the courses will be streamlined and offered in appropriate sites.

Partners/Linkages/ Decision/Ministry objectives supported:

- Wildlife Habitat Inventory and Analysis Specialists, Forest Ecosystem Specialists, Rare and Endangered Species Specialists, Water Inventory staff, Fish Inventory staff, Laboratory, computer systems specialists, Forest Inventory staff, Licensees, contractors and others.
- All parties collecting inventories are working in partnership directly or indirectly to achieve the Ministries Goals as stated in the their Business Plans.
- Management, protection, conservation and restoration of biological and physical diversity of British Columbia.

- Inventories performed in the spirit of the RIC standards and methods are essential in achieving this goal.

Consequence of Not Funding:

- The RIC courses are very expensive to implement and the market of participants at any one time is small resulting in course cancellation. As a result there is a creation of unfair contract selection criteria in the RFP process of FRBC funded inventories. Potential contractors are denied participation, i.e. The Wildlife Species Rating course scheduled for the beginning of October 2000 was cancelled due to lack of registrants, 2 applied. The contracted course provider Forestry Continuing Studies Network can not offer RIC courses with less than 10 participants. The potential registrants require certification to compete with those already certified in the pilot courses that were free to participants. Since FRBC Schedule A's require those participating in data collection be certified in specific RIC inventory methods RIC has put uncertified contractors at an unfair disadvantage in the market place.
- There is a potential for lawsuits if RIC can not provided contractors access to certification in the RIC methods.
- Most RIC wildlife, habitat and water monitoring and inventory courses will not be successful in the present situation.

Timing Constraints:
***Short term:* 01-02**
Project to begin April 1, 2001 with the expectation of one Wildlife Inventory and Analysis Section RIC methods course and challenge process completed by December 2001. This will be the pilot for all Wildlife Inventory and Analysis Section RIC methods courses to go on-line.
***Long term:* 02-04**
All Wildlife Inventory and Analysis Section Water Inventory and Conservation Data Center RIC methods courses to go on-line
New course curriculum to be written, piloted and placed on-line as required. The system would be developed under the supervision of the Resources Inventory committee

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		50 000	75 000	25	150 000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Protocol for Inventorying Rare Species (revised)

Originators:

Name(s): Andrew Harcombe
Organization: Conservation Biology Section, Resources Inventory Branch
Telephone & Fax: 387-9798 (O); 387-2733 (F)
E-mail Address: andrew.harcombe@gems2.gov.bc.ca

Project Summary

Rare species are key indicators of biodiversity, at the provincial, national, and international levels. A protocol will be developed that clearly links rare species inventory to RIC standards, with appropriate sampling strategies, priority data gaps, management prescriptions and monitoring. Focus will be on Identified Wildlife species already being impacted by forest and range practices. This project will support the strategic FRBC objectives of enhancing knowledge about forests and enhancing environmental values, focussing on endangered species.. This project is for the Criteria and Indicators for Sustainability Component.

Status

new

Project Details:

Background: Funding in the past has not necessarily focussed on the highest priorities. Identified Wildlife (Volume 2) has determined priorities based on degree of risk and potential impact of forest and range management practices. Some of the RIC standards are designed for entire species groups; these are not always the most efficient for rarer species. Sampling strategies that will allow monitoring of these important indicators of biodiversity have not been developed and applied consistently. Inconsistent efforts make long-term monitoring difficult.

Objectives: to develop a protocol that will guide further inventory and monitoring for rare species, including prescriptions for appropriate management. Existing regional inventory efforts will be enhanced, and further inventory investment will be protected through a standard approach to monitoring. Having a better monitoring procedure will allow implementing a monitoring plan, currently not done. Monitoring would ensure that activities designed to protect rare species were working, key to meeting certification criteria.

Scope: provincial

Clients: provincial and federal government; State of Environment Reporting;

Decision/Ministry objectives supported: Natural Diversity for protecting, maintaining, and rehabilitating BC's native wild species and their habitats

Deliverables:

1. Assessment of needs and outline for protocol: October 2001
2. Sampling strategy and methods for protocol: December 2002
3. Provincial inventory plan for rare species, with priorities: November 2001
4. Species accounts for Identified Wildlife: ongoing until December 2003

Partners/Linkages:

Partners will be provincial and federal governments; CRII funds for staff coordination; linkage to Rare Species (Identified Wildlife) Inventory project in Environmental Baselines Component; linked to Identified Wildlife management Strategy and State of Environment reporting

Consequence of Not Funding:

further expenditures and effort may not focus on high priorities; work may not be repetitive and monitoring would be impossible; inconsistency of methods make further assessments flawed

Timing Constraints:

Needs to be done before too much more inventory on rare species is carried out

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$150,000	$200,000	$180,000	$610,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Protocol for Forest-dependent Species

Originators:

Name(s):Andrew Harcombe, James Quayle
Organization: Conservation Biology Section, Resources Inventory Branch
Telephone 387-9798 ; FAX: 387-2733
E-mail Address: andrew.harcombe@gems2.gov.bc.ca

Project Summary

This project will design a protocol for monitoring old-growth dependent species, since these are a main indicator of biodiversity in managed landscapes. Once the protocol is completed, which will include selection of species, sampling strategy, appropriateness of available standards, and monitoring, it will be tested as a pilot project in the third year. This project will support the strategic FRBC objectives of enhancing knowledge about forests and enhancing environmental values, focussing on forest dependent species, under the Criteria and Indicator Component.

Status

new

Project Details:

Background: The Montreal Accord lists forest-dependent species as a main indicator of the status of biodiversity. To date, there is no monitoring program to indicate success of landscape unit planning and other Forest Practice Code regulations in providing adequate habitat for these older forest dependent species.

Objectives:

1. Identify potential indicators of older forest dependency
2. Develop a monitoring protocol that includes appropriate species for different forest types, sampling methods, sampling strategy, and frequency of sampling
3. Test the protocol in one or two pilot projects

Scope: provincial

Clients: government, industry

Decision/Ministry objectives supported: Natural Diversity for protecting, maintaining, and rehabilitating BC's native wild species and their habitats

Deliverables:

1. Report based on literature search to determine candidate species (plants and animals)
   December 2001
2. Protocol for monitoring dependent species March 31, 2003
3. Pilot field project March 31, 2004

Partners/Linkages:

Partners: Wildlife and Habitat branches, regional wildlife and habitat staff, industry biologists

Consequence of Not Funding:

Important indicator group for biodiversity will be ignored; success of landscape unit planning, including Old Growth Management Areas, will be unknown.

Timing Constraints:

No significant deadlines

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$38,250	$30,000	$30,000	$98,250

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Linking Climate and Forest Ecosystem Maps for Forest Management

Originators:

Name(s): Dave Spittlehouse
Telephone: 250-387-3453
Fax: 250-397-0046
Organization: research Br., Min Forests
E-mail Address:
dave.spittlehouse@gems4.gov.bc.ca

Project Summary

Understanding how forests are responding to the climate aids the sustainable management of BC's forests. At present, we are limited in our ability to use climate information in forest management due to a lack of detailed, spatially explicit climate data. The proposed project will link new digital climate maps and Biogeoclimatic Ecosystem Classification maps of the province to improve descriptions of climate regimes of ecosystems and tree species. The resulting electronic database will greatly enhance our ability to utilize climate data in forest management.

Status

New project but based on previous and current work funded by Environment Canada, Ministry of Forest and Min. Environment Lands and Parks.

Project Details:

Background

Climate is an important factor controlling forest regeneration and growth, and natural disturbances such as fire, pests and diseases. Sustainability indicators are being developed that require an improved understanding of the links between land surface processes and the global climate. Future global warming and changes in precipitation are likely to have a major effect on forest ecosystems. Understanding how forest ecosystems respond to the present climate will improve our ability to manage forest. This information will also help in predicting responses under a changed climate and lead to the development of strategies to mange forests in the face of future climate change. Previous work has provided descriptions of climate at the subzone and variant level of the Biogeoclimatic ecosystem classification (BEC) system. However, it was based on a relatively small climate database such that many ecosystems were not fully represented and some have no climatic descriptions. Furthermore, the data are not available in a format suitable for utilization in a geographic information system.

A digital database of monthly temperature and precipitation for BC on a 4-km grid is being produced. (Similar databases are already available for the US border states and the Yukon). This work uses climatological and meteorological techniques to interpolate measured data to account topographic affects on climate. The database is for the present climate and also has predictions of the future climate for BC under global warming. The proposed project will overlay the climate data to the digital BEC maps of the province to improve descriptions of climate regimes of ecosystems and tree species. Such descriptions will improve sustainable management of BC's forests and determination of indicators of sustainability.

Objectives

- Overlay maps of climate variables and BEC subzones and variants to produce unique climate descriptions of each unit.
- Provide a digital database of climate/vegetation linkages that would be accessible to government, industry and the public through the Web
- Use the resulting climatic descriptions and predictions of future climatic conditions to assess potential impact of global warming on BC's forests

Scope: Provincial

Clients: Government and forest industry personnel

Decision/Ministry objectives supported: Strengthening sustainable forest management

Outputs to date if continuing: Electronic BEC maps, digital climate database for the southern half of the province is now available.

Deliverables:

Conversion of digital climate database to interactive visual maps.
Procedures to interpolate between the scale of the climate maps and the BEC maps
Climatic descriptions of subzones and variants of BEC
Evaluation of potential changes in climate of existing subzones under global warming

Partners/Linkages:

Marvin Eng and Del Meidinger, Research Br., Min. Forests, Victoria
Bill Taylor, Environment Canada, Vancouver; Eric Taylor, Natural Resources Canada, Ottawa
Chris Daly, Oregon State University, Corvallis, OR

Consequence of Not Funding:

Reduced ability to assess impacts of current and future climate on BC forest ecosystems.

Timing Constraints:

None

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
None	*	30,000	60,000	10,000	100,000

* $100,000 has been invested in the production of the digital climate database, and many millions of dollars have been invested in the development and application of BEC to the province.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Soil Productivity

Originators:

Tom Niemann
387-8386
387-1467 (fax)

Ministry of Forests
tom.niemann@gems6.gov.bc.ca

Project Summary

Quantify the reduction in tree growth rates (site index / productivity) expected for various [illegible] and degrees of soil disturbance, by soil type.

[illegible]oil scientists have expressed interest in and support of this project.

Project Details:

Background – MOF soil scientists think that BC is ahead of the rest of Canada in monitoring / reporting on soil conservation; that BC should make the most of existing information and studies underway; and that BC should work towards filling information "holes" and developing a better indicator for soil management.

FRDA reports (1988) estimated the economic impact of reductions in soil productivity due to disturbance by harvesting systems at $80 million / year, based on conjectural assumptions about growth losses and related economic activity. This work led to the detailed requirements under the Forest Practices Code.

Objectives – (1) To compile, analyze and report on available information on types and degrees of soil disturbance, by harvesting system; including estimates of productivity losses.
(2) To measure and analyze growth losses in the field, using growth intercept methods, for representative areas previously noted as disturbed, by harvesting system and forest type (e.g. BEC zone and variant). The intent is to fill "holes" in currently available information.
(3) Make recommendations on practical indicators for managing soil disturbance in operational settings.

Scope - provincial
Clients – Ministry of Forests (MOF), forest industry
Decision/Ministry objectives supported – State of the Forest report (MOF)
Outputs to date if continuing – N/A

Deliverables:

Objective (1) report on available information to be completed in 2001/02. Report on Objectives (2) and (3) to be completed in 2003/4. Related deliverables to be derived from the project that are not part of the project (i.e. project is not accountable for these): papers in peer-reviewed journals; international discussion paper(s); adjustment of soil management guidebooks.

Partners/Linkages:

MOF Research Branch, MOF Forest Practices Branch, CFS soil scientists

Consequence of Not Funding:

- The State of the Forest report will not be able to provide a meaningful picture of provincial soil productivity impacts.
- The long-term productivity losses associated with various harvesting systems and forest types will not be adequately considered in the selection of harvest methods.
- The Timber Supply Review will not incorporate accurate information on future productivity.
- Opportunities will be lost to: a) convey a positive message for government, industry and the global marketplace that soil disturbance in BC is under control and managed economically as a component of sustainable forest management; b) increase recognition and profile for BC soil conservation guidelines and "the science behind the numbers;" c) confirm the need for continued vigilance by all parties.

Timing Constraints:

The State of the Forest report is to be completed (ready for publication) by the end of December 2001. This will require that Objective (1) contract work begin as early as possible in year 01-02 and the draft technical report completed by September/October so that results can be incorporated in the State of the Forest report. The final technical report for Objective (1) is to be printed by end of March 2002.

The final technical report for Objectives (2) and (3) is to be completed by March 2004.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
??	?? (FRDA)	$30,000	$30,000	$30,000	$90,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name:* *Old Growth Biodiversity Attribute Information by BEC Variant

Originators

Names	Shane Ford	Organization:	MoF, Forest Practices Branch
	Andy MacKinnon		MoF, Research Branch
	Mike Fenger		MELP, Habitat Branch
Tel./Fax:	387-1310 / 387-1467	E-mail:	shane.ford@gems6.gov.bc.ca

Project Summary:

Conserving biological diversity and maintaining forest ecosystem condition are basic requirements of sustainable forest management and represent two key components by which our conservation efforts will be evaluated provincially and globally. Informed decision-making for higher level planning requires that we have a way of evaluating the benefits and costs of a given management decision. Currently, landscape unit planning for conservation of old growth forests is undertaken without the suitable criteria and indicator thresholds necessary for informed decision-making. This project aims to enhance our knowledge of criteria and indicators of old growth forests by BEC variant to support planning decisions and to enable conservation effectiveness monitoring.

Status

New

Project Details

Background

Establishing spatial old growth management areas (OGMAs) in landscape units is one of two priority biodiversity elements required in the current landscape unit planning process. Old growth management areas represent government's mechanism for retaining old growth forests required in the Strategic Planning Regulation and a tool for biodiversity conservation. These OGMAs are also a fundamental component of the province's contribution to provincial, federal, and global biodiversity conservation.

As potential OGMAs are delineated in a landscape unit, the relative quality of various OGMAs needs to be evaluated for the purposes of informed decision-making and sustainable forest management. Currently there is a gap in the tools available to planners in evaluating potential OGMAs: there are no ecological criteria or thresholds upon which to make recommendations on OGMA suitability or quality.

Data on stand-level OGMA criteria and thresholds are necessary for long-term monitoring of the effectiveness of OGMAs as a biodiversity conservation tool and for future decision-making (e.g. as OGMAs are moved due to ecological or economic pressures). The choice of a new OGMA to replace the previous OGMA will need to be based on sound biological criteria such as those provided as delierables for this project. Basically, the criteria and thresholds will allow monitoring of our biodiversity conservation efforts and will also allow for informed resource management decisions.

Objectives

The following objectives will direct the development of evaluation criteria and indicators for old growth management areas to support landscape unit planning and to monitor the effectiveness of biodiversity conservation:

- Develop provincial categories & standards for qualitative and quantitative data
- Develop terms of reference for field data contracts
- Identify corporate data sources and sampling priorities
- Develop an Access database for corporate/field data & reporting
- Analyze and summarize corporate/collected data for subzones & variants
- Produce field cards and a web site where the data as well as methodology is made available.

Scope

Provincial, regional, and district. The deliverables will be relevant to industry staff and government staff for district planning purposes but will also allow reporting on biodiversity conservation effectiveness monitoring at the district, regional, and provincial levels.

Clients

District planners, forest industry planners, District Managers, Forest Ecosystem Specialists, and Regional Fish and Wildlife Managers.

Decision/Ministry objective supported

This project directly supports the provincial higher level planning process, specifically the direction to undertake and complete landscape unit planning. The deliverables from this project supplements the Landscape Unit Planning Guide (LUPG) and fills gaps in LUPG direction on stand-level old growth attributes.

Work on Old growth attributes by BEC variants is incremental to the Ministries mandate as it enhances the current age data from forest cover maps that is currently the basis for OGMA delineation. The MoF and MELP do not have the resources necessary to provide the attribute data for improved decision making.

Outputs to date if continuing

Though this project is new, there are localized attempts to produce similar products in response to a need to support landscape unit planning decisions. Approximately Six of 72 BEC variants have been sampled and old growth attributes defined.

Deliverables:

Provincial categories & standards for qualitative data	Sept. 2001
Field test sampling protocols and establish sampling priorities of BEC units across 4 NDTs	Oct. 2001
Terms of reference for field data contracts	Nov. 2001
Priorities for variant sampling by area and landscape unit planning priorities	Dec, 2001
Identification of corporate data sources	June. 2002
Access database for corporate/field data & reporting	Dec. 2002
Summary/Analysis of corporate/collected data for subzones & variants	Jan. 2003
Stand-level old growth attribute web site and field cards	Dec. 2003

Partners/Linkages

This project will be undertaken in partnership with MELP and Branches of the MoF. Quality control and priority setting will be done in consultation/partnership with regional staff of both agencies.

This project links to ecological monitoring and adaptive management projects proposed by the Ministry of Forests and BC Parks by assisting or providing baseline ecosystem data for these initiatives. Sampling for this project will be undertaken in Protected Areas and the Provincial Forest as a means of supplementing data for other projects.

Consequences of Not Funding

Decisions on biodiversity conservation and retention of old growth forests will be undertaken without solid scientific criteria and indicators and no means of assessing conservation efforts in British Columbia. Absence of this information will result in potentially uninformed decision-making.

Timing Constraints

This project needs to begin as quickly as possible so that the information is made available in a timely manner to planners and statutory decision makers. This project must be completed within three years to have relevance in landscape unit planning decisions.

Past Investment and Proposed FRBC Budget

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
0	60,000	$90,000	$400,000	100,000	$590,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project name: ***Development of a standard methodology for monitoring sediment dynamics and channel change in B.C. rivers***

Originators: Steve Chatwin and Dan Hogan B.C. Ministry of Forests
(250) 387-5887 steve.chatwin@gems1.gov.bc.ca

Project Summary: Project will evaluate methods for stream channel monitoring and develop a standard methodology for monitoring sediment dynamics and channel change in BC rivers. The proposed methodology will separate natural vs logging-induced changes, present field techniques to collect the appropriate data, and outline the limitations of the method.

Status: New

Project Details:

Background: Monitoring of stream channel change may be the most practical method of measuring the success of forest regulations and watershed restoration activities in maintaining fish habitat. Possible channel changes can include: increased channel width, a shift from stable to unstable bars, increased rates of sediment transfer, increased sediment yield, increased number of aggraded reaches, and increased number of degraded reaches. A monitoring program must be capable of detecting all of these trends and be able to recognise the occurrence of natural and logging-related channel impacts.

Cost is a primary consideration. The proposed method is based on once a year survey of paired watersheds carried out at low flow when channel bed characteristics are most obvious. The monitoring strategy is to assess relative changes in channel characteristics using multiple paired watersheds where various pairs of logged and unlogged sub-basins are monitored. Mainstem reaches may be assessed using a before-after study design where an unlogged partner cannot be found. Most monitoring programs require a combination of multiple-paired watershed approach in the upper reaches of a watershed and a before-after study in the lower reaches. Data that will likely be recommended in the protocol includes:

1. sediment delivery locations adjacent to the channel network,
2. changes in channel geometry using repeated surveys of channel cross-sections as well as low level aerial photography
3. changes in the rate of bank erosion from cross-sectional measurements
4. net changes in bed load storage from cross-sectional surveys
5. changes in bed load texture

6. sediment transfer rates using scour chains and tracer stones
7. estimate of discharge using staff gauge observations
8. historical channel change using airphoto analysis

Objectives: 1) To describe a protocol for establishing stream channel monitoring networks on watersheds of various sizes for environmental baseline monitoring.
2) To establish a trial set of monitored watersheds in one region of the province.

Scope: Provincial

Clients: Forest licensees, Ministry of Forests, Ministry of Environment, Department of Fisheries and Oceans, Watershed Restoration Program

Deliverables: 1) A standard methodology for conducting paired watershed and before-after treatment monitoring studies on stream channels of different sizes. Delivery by March 31, 2002.
2) A small network of monitored paired watersheds (approximately 6 pairs) in one region of the province. Delivery by December 31, 2002.

Partners/Linkages: Ministry of Forests - Nelson Region, Kalesnikoff Lumber- Castlegar, Dept of Geography, U.B.C. The project also links to the Watershed Restoration Program (validation monitoring) and the development of criteria and indicators of fish sustainability and watershed maintenance.

Consequence of not funding: There currently are no inexpensive methods for assessing the cumulative benefit or impact of forest practices or watershed restoration at the watershed scale. Alternate approaches using water quality data or fish monitoring are data intensive and require continuous data sets. This project will design a cost-effective monitoring protocol that can be used to assess fish habitat sustainability and the condition of aquatic ecosystems. It will also provide a method of meeting certification measures, e.g., under the Forest Stewardship Council principles, "Forest management operations shall recognize, maintain, and, where appropriate, enhance the value of forest services and resources such as watersheds and fisheries". Under Principle 10.6, "The techniques and rate of harvesting, road and trail construction and maintenance, and the choice of species shall not result in long term soil degradation or adverse impacts on water quality, quantity or substantial deviation from stream course drainage patterns." This protocol will provide data on changes to stream channel morphology.

Timing Constraints:
Project needs to start by April 2001

Proposed FRBC Budget

Past investment	Proposed budget			Total proposed
	01-02	02-03	03-04	
	30,000	80,000	30,000	140,000

Environmental Baselines Component

Vision

The vision for this component is:

> *To support implementation of SFM and in particular to facilitate the consistent use of approved criteria and indicators by establishing a system for identifying and measuring provincial environmental SFM baselines.*

This component supports Forest Renewal BC's Strengthening Sustainable Forest Management strategic objective by developing knowledge and tools required to consistently measure existing forest ecosystem conditions and processes of change. This information is essential for determining sustainability, and in particular is an important input into successful application of SFM criteria and indicators.

This component satisfies all of the eligibility criteria, performance targets and linkage requirements as follows:

1. This component will:
   - Review existing baseline data coverage for known and proposed indicators
   - Define standards for establishing environmental baselines, incorporating results of review
   - Develop tools, techniques and processes to enable maximum use of existing data and data collection systems, including business-related data, for spatial and temporal indicator tracking
   - Carry out a gap analysis to identify missing baselines and data
   - Develop an action plan for filling priority gaps, including establishment or enhancement of information collection systems and equipment

2. This component complements and facilitates regional investments by defining baselines, describing standards and providing a foundation for risk analysis and prioritization to fill gaps.

3. This component is incremental to the ministries existing programs and policies by virtue of new requirements of SFM.

4. Time-bound deliverables and performance measures are defined in the attached list of recommended projects.

5. The planning process for this component, under MoF leadership, involves a peer group comprised of the BC Forest Resources Inventory Council (FRIC), BC Forest Productivity Council (FPC), and Canadian Forest Inventory Committee (CFIC).

6. Partners in implementation of this component will be Forest Renewal BC, MoF, MELP, BC Fisheries, and regional SSFM planning groups.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Tracking Biodiversity

Originators:

Name(s): Tory Stevens/Dave Clark/Mike Fenger Organization: Ministry of Environment, Lands and Parks, Habitat Branch
Telephone & Fax: (tel) 250-953 5140;
(fax) 250-356-5104 E-mail Address: tstevens@victoria1.gov.bc.ca

Project Summary

A goal of many planning processes (LRMP, LUP) is to capture the range of ecosystems and structures within a management unit in order to provide a significant range of environments for the coarse filter maintenance of biodiversity. The GIS tools to guide this process (TEM and PEM) have not yet been developed over the entire province. In their absence planning is proceeding both because it is mandated by government and because the options are continuously diminishing. A methodology for a quick evaluation of the spatial arrangement of existing ecosystems and existing or proposed protected areas and special management areas will provide decision makers with the opportunity to make decisions that are better informed.

Status

New

Project Details:

Background: District staff throughout the province have been tasked with spatial planning objectives to satisfy biodiversity. In many areas the underlying map layers that would assist in these objectives have not been created. An interim product would be useful.

Objectives: To provide guidance on ranking the underlying biodiversity of the mature and old growth forest remnants in BC.

Scope: Provincial

Clients: MOF and MELP district planners

Decision/Ministry objectives supported: Landscape unit planning/ LRMP planning

Deliverables:

A simple and provincially available methodology using existing map coverages to evaluate the coarse filter components of a biodiversity plan for any management unit (landscape unit, district, TSA, region, etc.).

Task	Target date
Describe methodology	June 2001
Test in selected management unit	August 2001
Extension and training to all districts	September/October 2001

Partners/Linkages:

This project links to the PEM projects as any of them could be used to test proof of concept. It also links to any projects that deal with the maintenance of biodiversity at the landscape level.

Consequence of Not Funding:

Decisions are being made each year with consequences for biodiversity. These decisions are often being made in the absence of a rigorous analysis because of the lack of a recognized methodology supported by existing tools.

Timing Constraints:

This methodology will be useful to analyse gaps in the biodiveristy strategies of any planning process such as LRMPs or landscape units. Landscape units must be completed by March 2002.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		25 000			25 000

FOREST RENEWAL BC

HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Broad Ecosystem Inventory Interpretations and Analysis

Originators:

Name(s): Bruce Pendergast, Tony Button Organization: RIB
Telephone 387 - 9770
Fax 387- 2733
E-mail Address:
Bruce.Pendergast@gems4.gov.bc.ca
Tony.Button@gems5.gov.bc.ca

Project Summary

To use Broad Ecosystem Inventory (BEI) mapping in the interpretation of capability (potential value) and suitability (present value) of the provincial land base for a selection of species (initially forest carnivores), and integrate BEI data with other existing data sets to analyse the derivation of habitat networks and connectivity.

Capability-suitability interpretations are an important input to resource planning activities as they allow consideration of wildlife values in the planning process. Assurance of adequate habitat linkages provides opportunities to reduce actual reserve areas needed to maintain biodiversity. Strategic level mapping for the province of habitat connections or corridors needed between existing preserved areas such as parks or other habitat reserves is needed to facilitate wildlife movements.

Status

New– Note: the Habitat networks/connectivity component would not require new field data but would provide new information based on Resource Inventory Committee approved methodologies.

Project Details:

Background – Capability/Suitability Interpretations

Strategic level mapping for the province at 1:250,000 (Broad Ecosystems Inventory) has been extensively used in LRMP with interpretations for up to thirteen species. At the provincial level the mapping has been interpreted for capability for grizzly bear and marbled murrelet. This level of mapping is completed for the province, although some areas are being upgraded to incorporate recent biogeoclimatic mapping updates.

This map base is compatible with MOF Biogeoclimatic zone maps and can be used with them in GIS supported planning.

Background – Habitat Networks and Connectivity Analysis

Small isolated reserves are inadequate as they may provide insufficient habitat during seasonal food shortages or sufficient animals to survive other stresses such as disease outbreaks. This effect is exacerbated by decreased viability due to inbreeding of small isolated groups. Habitat corridors can be identified at the landscape unit level through TEM (Terrestrial Ecosystem Mapping), PEM (Predictive Ecosystem Mapping) or Forest Ecosystem Networks (FEN) mapping. These mapping systems complement and increase the value of regional investments in TEM and PEM mapping as these initiatives need a broader perspective to ensure sufficient corridors for species with large ranges and low population density (such as wolves, grizzly bears, cougar, wolverine and caribou). As some of these species routinely move several hundred miles, planning based on large-scale mapping may overlook opportunities to link to important habitat in other planning units. Appropriate small-scale mapping to provide an appropriate base for network mapping now exists in Broad Ecosystem Inventory for the province. This map base is compatible with MOF Biogeoclimatic subzone variant maps.

The proposal is entirely incremental to the Ministry mandate, though much of the information analysed to make the product (eg. Biogeoclimatic zones and Ecoregions) was produced through ministry initiatives. Because the project is a provincial overview it will not be part of the RMP's

Objectives: 1.To map capability and suitability for forest dwelling carnivores in digital form, GIS compatible with Forest planning data systems and maps. 2. To map minimum networks needed to link reserved and low timber value wildlife habitat, and to provide provincial coverage of reserves and proposed reserves and corridors.

Scope – Provincial

Clients - Regional Forest planning staff, timber licensees, first nations and land claim negotiators

Decision/Ministry objectives supported – Natural Diversity and Sustainable social, Economic and Recreational Benefits and better management of biodiversity and better application of wildlife reserve areas

Outputs –1: Capability-Suitability maps and legends; 2. Comprehensive catalogue of reserves and areas of low timber value but significant wildlife value with accompanying maps and legends of networks.

Deliverables:

1. Digital map of forest carnivore capability and suitability of the province – March 2002
2. Digital map of Habitat network of the province – December 2003

3. If we were able to receive third year funding of $50,000 for the BEI Interpretations and Analysis, then the additional funds would be used for the following items:

- Development of Decision Support Desktop tools: GIS and Oracle based application designed for regional and headquarters wildlife and habitat staff;
- Integration of meta-population models with earlier work on habitat corridors, connectivity, fragmentation, and wildlife habitat capability/suitability interpretations;
- Additional wildlife habitat interpretations for forest birds requiring larger habitat patches (ie spotted owl, northern goshawk, white-headed woodpecker, ferruginous hawk);
- Additional wildlife habitat interpretations for forest amphibians and small mammals that are sensitive to habitat fragmentation. These species will be selected by regional and headquarters wildlife and habitat staff.

I think this would be viable if we received additional funding in the third year.

Partners/Linkages:

Partner with Wildlife Branch, linked to CRII funded Broad Ecosystems mapping project

Consequence of Not Funding:

1. More working forest may be removed from timberland base, than necessary to maintain acceptable amounts of habitat to maintain biodiversity. Some species may be extirpated from forest management areas.
2. Some species may be extirpated from isolated reserve areas.
3. Lack of provincial perspective for reserves and corridors as they will be done at a local level

Timing Constraints:

No deadlines but information would be used best if available while LRMP's are underway

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$90,000	80,000	$50,000	$220,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Provincial Wildlife Habitat Monitoring

Originators:

Names: Bruce Pendergast, Dave Clark, Lynne Bonner
Organisation: Wildlife Inventory Section, Resources Inventory Branch, MELP
Telephone: (250) 387-9770 FAX: 387-2733

Project Summary

This project will develop a province-wide wildlife habitat monitoring plan

The successional changes resulting from timber harvesting have a large impact on wildlife habitat. Strategies to minimise biodiversity impacts include old growth, snag and patch retention as well as specific recommendations for identified wildlife species.

However it is not known how some fragile habitats (such as high elevation subalpine forests) are being impacted. These are not necessarily rare or endangered ecosystems and therefore they "fall through the cracks" when it comes to biodiversity protection. Understanding the impact of harvesting on these less resilient ecosystems over time requires long term monitoring. Establishment of permanent vegetation sampling plots will provide baseline data followed by periodic sampling to assess changes in vegetation over time.

Status: New

Project Details:

Background – Ongoing monitoring efforts by other agencies that assess elements of forest structure will be evaluated with respect to their applicability to characterisation of wildlife habitat, in terms of the attributes tracked and the sample distribution. Complementary efforts will be proposed and implemented to address knowledge gaps.

Objectives –

The objectives of this project include:

- identification of: 1) habitats that are not protected by existing biodiversity management strategies and 2) the wildlife species dependent on these habitats and the relevant habitat criteria to measure; (Year 01-02)
- ecological stratification of habitats to choose representative sites for setting up monitoring plots; (Year 01-02)
- assessment of existing monitoring programs (e.g., growth and yield, national forest inventory) for possible co-ordination of data collection, storage and analysis; (Year 01-02)

- evaluation of RIC monitoring standards (*Environmental Monitoring in Range and Wildlife Habitat Management* (RIC, 1996) and associated data systems) for any required revisions or updates; (Year 02-03)
- undertake revisions to the RIC habitat monitoring standards and data systems, if required; (Year 02-03)
- completion of a provincial habitat monitoring plan. (Year 03-04)

Scope – provincial
Clients – industry, resource agencies, NGOs, First Nations
Decision/Ministry objectives supported – FRBC objectives: 1) Strengthening Sustainable Forest Management (through adaptive management, i.e. monitoring to provide feedback to planning) and 2) Environmental Baseline (establishing baseline habitat information and monitoring changes over time). MELP objectives: 1) protecting and maintaining natural diversity and 2) sustainable social, economic and recreational benefits

Deliverables
Provincial Wildlife Habitat Monitoring Plan and Strategy by 2003

Partners/Linkages
Habitat Branch and Wildlife Branch of MELP; Resources Inventory Branch and Research Branch of MoF
Linkages: builds on Monitoring Strategy for Incremental Silviculture (MELP, Feb. 1996) and HCF Habitat Enhancement Monitoring Program (MELP, 1993)

Consequence of Not Funding:
Long-term degradation of some habitats with potential loss of associated wildlife populations.
Inability to improve forest management through lack of adaptive management feedback.

Timing Constraints:

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
	150,000	58,000	90,000	27,000	175,000

Project name: Predictive Terrain Stability Mapping

Originators: Steve Chatwin Research Branch Ministry of Forests
387-5887 steve.chatwin@gems1.gov.bc.ca

Project Summary:

This project will use existing reconnaissance resource inventory information and detailed digital elevation data and regional inventories of landslide occurrence to produce detailed terrain stability maps with quantitative landslide probability functions. This method, if successful, will produce detailed terrain stability maps, at a fraction of the cost of conventional method. The resulting maps will serve as an environmental monitoring baseline for hillslope stability. The method, if successful, will provide better information with which to pinpoint sensitive terrain requiring terrain stability assessments. This will help reduce mapping and survey costs to licensees and government, and will help in formulating future RMP priorities.

Status: New

Project Details

Background: Terrain stability maps are a requirement for forest development planning and for Watershed Restoration Program planning. When "probability of landslide" statistics are generated for each terrain polygon, the map forms an environmental baseline for monitoring hillslope response to forest harvesting as well as a measure of the success of hillslope restoration activities.

Detailed terrain stability maps (1:20,000) are the preferred stability maps, but are expensive to produce ($6/ha) and currently cover less than 20 % of the province. Also, conventional terrain maps only indicate the likelihood of landslides in a qualitative manner, so have limited utility as environmental baselines.

Reconnaissance terrain maps by contrast cover a much larger percentage of the province. When combined with more detailed inventory information, such as DEM, and supplemented with other site information such as BEC, there is an opportunity to enhance the resolution of the reconnaissance terrain stability maps and produce detailed landslide probability hazard maps.

Objectives: 1) To develop a quantitative prediction model for detailed landslide hazard mapping utilizing existing resource inventory information using Bayesian probability formulae.
2) To test the predicted terrain stability maps against conventional terrain maps
3) To demonstrate the method for one region in the province

Scope: The methods will be tested in Vancouver Region and Nelson Region, where extensive databases on individual landslides (>2000 landslides in each region) already exist.

Clients: FRBC Watershed Restoration Program; Ministry of Forests districts, licensees

Deliverables: A method for combining reconnaissance resource inventory information with DEM files to produce detailed maps of landslide probability, that will serve as an environmental baseline for monitoring, and as information for determining RMP priorities and the need for terrain stability assessments.
Delivery March 31, 2003

Partners: Vancouver and Nelson Forest Region, Geological Survey of Canada- Terrain sciences Division, BC Ministry of Mines,

Consequence of not funding: Terrain polygons will continue to have qualitative descriptors of landslide hazard, instead of probability functions. Large parts of the province will remain to be mapped at the detailed scale using conventional, but expensive field methods. Costs incurred for more detailed terrain mapping and for terrain stability assessments will be higher than necessary. Timber Supply reviews will use existing reconnaissance terrain information, which may have unnecessarily high timber supply impacts. Continuing impacts on the Timber Harvesting Land Base land base. Inability to evaluate current policy and practices frameworks and to report on terrain condition.

Past Investment and Proposed Budget

Past investment	Proposed budget			Total proposed
	01-02	02-03	03-04	
		$80,000	70,000	$150,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: BC Corporate Environmental Baseline

Originators:

Name(s):Evert Kenk Organization: Land Use
Coordination Office
Telephone & Fax: 356-5351/953-3481 E-mail
Address:Evert.Kenk@gems7.gov.bc.ca

Project Summary

The purpose of this project is to identify and specify the BC Corporate Environmental Baseline, which is intended as the standard digital atlas of resource inventories and other information that supports the various environmental monitoring processes carried on in the Province. This project will assess current baseline coverage for the indicators of sustainability and enable priority gaps to be identified.

Status

New.

Project Details:

Monitoring is being used to confirm or modify strategic plans and decisions and to support forest industry certification. The in excess of $200 million worth of FRBC funded inventory represents a valuable environmental baseline in support of monitoring. This project will undertake a review of existing baseline data coverage in support of environmental monitoring by assessing FRBC funded inventory as a first priority and then government funded inventory. Qualifying inventory will be specified as part of the BC Corporate Environmental Baseline. An analysis of gaps in the baseline to support needed monitoring will be done. The latter will assist in providing the necessary information to perform a cost-benefit in support of filling the gaps in the Baseline and for developing an action plan to fill priority gaps. Both RIC, the Resources Inventory Committee and LIICC, an interagency land and resource inventory and information coordinating committee, have identified this as a high priority project that will enable the monitoring community to make maximum use of existing data.

The objectives of this project are: i) to investigate the business need for baseline inventory in support of monitoring, ii) define the data requirements inventories need to provide to meet the business need, iii) define the Corporate Environmental Baseline and determine gaps, iv) undertake cost benefit for filling the gaps and v) develop an action plan for filling priority gaps.

Scope of application would range from regional to provincial. Clients would include all parties (government, industry and public) involved in change, effectiveness or outcome monitoring as relates to the environment.

Ministry objectives supported include State of the Environment, Forests and Parks monitoring; SLUP and LRMP outcome monitoring and monitoring the outcome of FRBC investments.

Deliverables:

The target deliverables are:

i) Environmental Baseline Needs Analysis
ii) List of Common Criteria/Indicators
iii) Environmental Baseline "gap" analysis
iv) Environmental Baseline Cost Benefit
v) An Action Plan (for 2002/2003) for filling priority gaps August 31, 2001

Partners/Linkages:

Both RIC and LIICC support this project and LUCO will provide administrative and project management support. LIICC is committing $30,000 to the first objective to develop an Environmental Baseline Needs Analysis. This project is linked with the Corporate Environmental Baseline Registry Project, which is the directory to the Baseline Atlas.

Consequence of Not Funding:

Consequence of not funding include: i) FRBC inventories not being used to support the monitoring process, ii) redundant data collection if data user is unaware of what is available, iii) provincial agencies delivering conflicting monitoring information resulting in loss of public trust, and iv) poorly planned allocation of FRBC funds to filling gaps in baseline.

Timing Constraints:

Action Plan for filling priority gaps should be available by August 31, 2001 for use in HRMP process for Fiscal 02/03.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$75,000.00			$75,000.00

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: **VRI Planning and Analysis**

Originators:

Name(s): Keith Tudor/Jon Vivian Organization: MoF Resources Inventory Branch
Telephone: 387-5997/356-7185 E-mail Address: Keith.Tudor@gems7.gov.bc.ca
Jon.Vivian@gems4.gov.bc.ca

Project Summary

This project will support the Provincial Vegetation Resources Inventory (VRI) Program through the provision of a planning and analysis framework that encompasses all aspects of the VRI. The VRI is currently being implemented throughout BC by a variety of tenure holders to support timber supply and landuse planning decision processes. The VRI Planning and Analysis Project will assist stakeholders through all stages in the design, implementation and development of an inventory through the following processes:

- Planning: comprehensive technical and business planning to ensure that all stakeholders needs are addressed in a cost-effective manner. Development of a VRI Strategic Inventory Plan is strongly encouraged to ensure all stakeholder involvement. The development of a VRI Project Implementation Plan detailing ground sampling activities for RIB authorization is essential.
- Coordination: liaison with all stakeholders to include industrial proponents, e.g., MOF/MELP regional staff, IFPA holders, to ensure VRI projects are coordinated with higher-level plans, RMPs, tenure agreements, etc.
- Design: review and analysis of proponent project plans to ensure compliance with provincial standards and rapid incorporation into the forest management decision process.
- Data processing: timely compilation and data analysis, to meet stated deadlines for TSR, etc.
- Quality assurance: independent audit of ground and photo-interpreted data.
- Analysis: the development of inventory adjustments.

This project will be implemented on a partial cost recovery basis due to recent reductions in available funding. FRBC funded VRI project plans should include funding for planning and analysis components. The Resources Inventory Branch (RIB) does not have the capacity or financial resources to conduct these activities. RIB's involvement will be clearly identified through documentation available on the web.

Further to the above, this project also provides:

- Communication: the facilitation of communications between industry, academia, government and NGOs on all aspects of forest inventory.
- Standards: the development of standards and procedures.
- Training: the development of training materials, manuals and field procedures.
- Analysis: the development of analytical statistical procedures to adjust inventory parameters.

Status

Ongoing.

Project Details:

Background

The Vegetation Resources Inventory (VRI) is the approved standard*for forest inventories in BC. The VRI is
an inventory toolbox that is used to assess the quantity and quality of timber and other vegetation resources in the province of BC. The VRI program was developed to address concerns raised by the 1991 Forest Resources Commission over the inconsistent and inadequate state of forest inventories in BC. It was developed under the guidance of the Resources Inventory Committee (RIC) which included resource specialists from a number of professional disciplines and represents provincial, federal, First Nations and private sector agencies. The VRI supports the Chief Forester's mandate to maintain and develop an inventory of the forestlands in BC. The databases and information resulting from VRIs are used to support forest management decision processes. MOF staff at Resources Inventory Branch coordinate the planning and assist regions and industry in implementing VRIs throughout the province.

* Inventory standards are approved and maintained by an inter-ministerial Resources Inventory Committee (RIC)

Objectives

The VRI implementation project provides support for the overall provincial VRI program, while also assisting in local (Region/ district/ licensee) VRI projects. The objectives of the VRI implementation program are to provide the following support services:

1. **Planning:** VRI Strategic Inventory (VSIPs) and VRI Photo-interpretation / Ground Inventory Project Plans ensure that all stakeholder input is considered in the VRI planning process and that technical implementation is consistent with provincial standards while meeting local business needs. The high level VSIP plans are developed at a series of public resources stakeholder meetings that ensure complete disclosure of project objectives and costs. These projects are coordinated with local RMPs. There are 3 VSIPS planned for 2001/02 and the review and development of approximately 10 ground sample plans.
2. **Analysis:** The analysis results of VRI ground sample inventories are used to adjust base case timber supply analysis and reduce risk and uncertainty in the forest management decision process. There are currently 6 regional-led VRI ground sample projects that will be analyzed by this VRI Planning and Analysis Project. RIB staff will also assist in the analysis/ review additional 8 industrially led projects. RIB expects this number to increase annually with increased funding made available through RMPs and MYAs.
3. **Analysis Experience:** The analysis process also provides MoF staff with experience in VRI ground analysis necessary for effective communication of the results in the forest decision process. The experience is also required to ensure standards and reporting tools (databases) are responsive to stakeholder needs.
4. **Development of Standards:** The development of consistent standards for sampling, analysis and application will ensure timely, cost effective information that meets stated business objectives. These standards and procedures are updated through an annual VRI Change Management Process.

Scope

This project is provincial in scope with regional and local applications. The data may also be used at the international level to support National Forest Inventory reporting and certification.

Clients

All users of forest inventory data in BC. More specifically, the most recent and primary users of this information are forest industry and MoF land management planning staff involved in LRMP and TSR. It is expected that as the database size increases with additional sample data that other resource users will be utilizing this information.

Incrementality

This project is incremental to the ministry mandate and follows a transparent planning process originating from a proponent and following a RIC-approved process through the VRI lifecycle.

Decision/Ministry objectives supported

- The analysis results are used to adjust base case timber supply analysis and reduce risk and uncertainty in the forest management decision process.
- MELP: data to localize ecosystem and habitat models.
- Forest practitioners involved in ecosystem/biodiversity modelling.
- Provide opportunities for enhancing fiber flow at the local management unit level by providing improved estimates on the quantity and quality of timber.
- The databases will used to refine and enhance the development of ecosystem, biodiversity and growth and yield models.
- VRI ground sampling is closely linked with evolving monitoring projects.
- The databases will be used to support local forest certification initiatives.

Outputs to date if continuing

To date, the program has accomplished the following:

i. **General Planning/Projects:** Over 25 VRI Strategic Plans and 22 Ground sample plans have been completed to date. This has resulted in 34 VRI ground or photo-interpreted inventory projects. Data from all these projects has been used in some manner in the forest management decision process. RIB will be incorporating this information into provincial base inventory files in 2000/ 2001;

ii. **Photointerpreted inventories:** VRI photo-interpreted inventory has been completed on approximately 10 million hectares;

iii. **Ground sample inventories:** VRI ground sample inventories have established approximately 3000 ground sample plots;

iv. **Analysis:** VRI ground sample analysis reports have been completed on approximately 10 forest management units and directly impacted the forest land management process. Additional 10 projects are underway with results expected within a year;

v. **Support tools:** The following support tools are utilized by project staff: ground data collection, validation and analysis systems, compilers and reporting systems, ground sample statistical systems, photo interpreted and ground sample databases, photo-interpretation validation systems and mapping products.

vi. **Manuals:** Manuals have been produced for ground and photo interpretation sample selection, field data collection and analytical adjustment procedures.

Deliverables:

- Continued support for VRI ground sample data compilation and analysis (800 ground samples are expected for compilation in 2000/2001 with 14 analysis projects either completed or reviewed by RIB).
- Ongoing refinement of data standards, procedures and manuals in order to meet ever changing clients business needs. A comprehensive set of VRI manuals and improvements to the WEB site are planned for 2000/2001.
- Continued training support of MoF, industry and the consultant community. (RIB staff currently work closely with over 6 large inventory consulting firms and every major licensee in the province regarding VRI planning, analysis and timber supply). Approximately 6 VRI training coursed co-ordinated through FCSN are planned.
- Continued support for the development of VRI strategic and ground and photo-interpretation sample plans. Approximately 13 VRI plans will either be developed or reviewed by RIB in 2000/2001.
- Deliverables for remaining years are expected to expand as industrial VRI activity increases.

Partners/Linkages:

The operational components for MOF VRI projects are coordinated through the RMPs. TFL, IFPAs and other specialized projects are similarly coordinated through a multi-team coordination team. The VRI planning process has resulted in numerous funding partnership agreements (e.g., Golden TSA/Ft. Nelson

TSA). VRI products assist in MoF lead timber related issues and provide MELP with ecosystem / habitat related information. This project also links with provincial and local forest monitoring initiatives.

Consequence of Not Funding:

The consequences of not funding this project are:

- The maintenance of consistent provincial inventory standards will be jeopardized through lack of coordinated provincial strategy.
- Potential increased VRI costs to industry through delays in planning, absence of training, approved quality assurance and data analyses.
- VRI implementation may be delayed resulting in increased risk and uncertainty in the forest land management process.
- Potential loss of full stakeholder involvement in the planning process.
- A lack of understanding by proponents in the design, implementation and analysis of a VRI project.
- Opportunities to confirm sustained or increased fiber flow may be lost.
- A consistent planning framework would be removed resulting in non-standard inventory data collection and increased overall inventory costs, while not meeting all stakeholder needs. The non-standard data would decrease the future value of the data and delay its application in the forestland management decision process.
- Communication between all stakeholders would be reduced, thereby increasing costs and delaying projects.
- Current investments in ground sample data collection may be lost, as ongoing database system development would be delayed.
- VRI training programs would be impacted resulting in the collection of poor quality, questionable data.
- Local forest certification initiatives may be at risk due to the inability for the MoF to provide timely consistent compilation and reporting.
- Subsequent monitoring initiatives may be negatively impacted.

Timing Constraints:

VRI ground sample and photo interpreted inventories have tight windows of opportunity for initiation, particularly the field data collection phase. Confirmation of funding by early spring, 2001 is requested with funding made available by April 1.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
900 000		198 000	300 000	300 000	798 000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: **Development of Provincial Inventory Monitoring Protocols**

Originators:

Name(s): Jon Vivian
Organization: RIB, MOF
Telephone & Fax: (250) 356-7185/387-5999
E-mail Address: jon.vivian@gems4.gov.bc.ca

Project Summary

Monitoring protocols and field procedures for implementation at the Management and Sub-Management Unit (Landscape) level will be developed under this project. In conjunction with industrial-funded pilot projects, business needs for monitoring data will be determined and protocols and sampling frameworks will be developed in response. Preliminary provincial monitoring protocols will be assessed and expanded, where feasible, to address Management Unit monitoring. Data from initial pilots will be analyzed and assessed as to meeting initial goals. Through collaborative pilot sites, enhanced monitoring protocols will be tested for operational implementation. Monitoring procedures will become part of the RIB VRI Toolkit.

Status

This project is a continuation of work initiated under the Growth and Yield Monitoring Task Force (GYMTF). The project scope has expanded to include a variety of new clients.

Project Details:

Background:

The Ministry of Forests recently completed the development of a new Vegetation Resources Inventory (VRI) that is being implemented throughout the province. The initial design of the inventory did not include a monitoring component. For the past five years FRBC has funded Resources Inventory Branch to develop monitoring protocols that address criteria and indicators identified by the Canadian Council of Forest Ministers and the Montreal Process. These protocols are currently being implemented at the provincial level as part of BC's contribution to the National Forest Inventory (NFI) Program. Further work is required to complete this development and further expand these protocols to address biodiversity, forest health, ecosystem assessment, climate change and the emerging Kyoto Agreement. This will include technical development, pilot testing and advising industry on the design and use of monitoring data. The subsequent implementation of these protocols in regional/industrial funded monitoring projects will provide time series indicator data that can be used to assess the state of BC's forests and rangelands.

Objectives:

1. To expand and complete the development of monitoring sampling protocols that respond to:

- Biodiversity
- Changes in forest structure
- Checking growth and yield predictions
- Forest health
- Soil productivity

- Climatic change

2. To develop sampling frameworks directed at the management and sub-management (landscape) unit level.
3. To pilot test, refine and make operational new protocols.
4. To develop field procedures, training manuals and recommend on data structures necessary that support monitoring data.
5. To analyze, process and report on data resulting from operational monitoring programs initiated by region/industry.
6. To establish linkages with the provincial and other monitoring initiatives.

Scope (local, regional or provincial)

May be implemented at all three levels depending on business needs.

Planning Process:

The development of monitoring protocols was requested by the BC Forest Productivity Council and the MOF Growth and Yield Coordinating Committee. A multi-agency Task Force oversees all work and ensures that products respond directly to client-driven needs and objectives. In this second phase, this work will be advanced in response to directed projects initiated by industry, MOF regions and the Canadian Forestry Service (NFI) under advisement from Canadian Forest Inventory Committee responding to direction from the Canadian Council of Forest Ministers.

Clients

Clients include BC Forest Resources Inventory Council, BC Forest Productivity Council, Canadian Forest Inventory Committee (NFI), FORDIV branches and Regions/Industry.

Decision/Ministry objectives supported

Industry: provision of information to assess certification
MOF: Chief Forester: provision of information to assess risk and uncertainty in the TSR process
MELP & Government of Canada: provision of information in response to Kyoto and Criterion and indicators, as implemented through the NFI.

Outputs to date if continuing

- Development of provincial monitoring protocols for implementation in the NFI.
- Monitoring framework for industrial certification.
- Monitoring framework and procedures to assess risk and uncertainty in the TSR process.

Deliverables:

- Analysis of pilot study monitoring data (four projects): July 31, 2002
- Manuals, field training, quality assurance: March 31, 2002
- Rationalization of monitoring at the Management/Sub-Management Unit level with stand level monitoring: March 31, 2002
- Field protocols and procedures for Management/Sub-Management Unit monitoring: March 31, 2002
- Expansion of Provincial Level Monitoring to encompass Kyoto and revised C&I requirements: March 31, 2002

Incrementality:

This project is incremental to the ministry mandate.

Partners/Linkages:

Linkages with:

- MELP: Criteria and Indicators for Sustainability Component: Development of Monitoring Protocols for Forest Dependent Species, SSFM (Andrew Harcomb)
- MELP: Habitat/Biodiversity Monitoring, SH (M. Fenger)
- MOF: Sustainable Resource Benefits Component, SSFM (G. Townsend)
- MOF: Forest Health Managed Stand Inventory Monitoring: SSFM, Environmental Baselines, (J. Henigman)
- MOF: Development of Silvicultural Monitoring Protocols: SH, (P. Martin)

- MOF: Growth and Yield/Forest Productivity: SSFM, (J. Vivian)

Consequence of Not Funding:

Inability to address issues on sustainability, criterion and indicators.
Inability to provide data to assess risk and uncertainty in the TSR process.
Data used to assess certification will not be available.

Timing Constraints:

- April 1, 2001: start review field 2000 Management Unit pilots.
- April 1, 2001: start provincial monitoring analyses.
- October, 2001:commence review of biodiversity and soil productivity needs.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
1,200,000	350,000	157,000	350,000	350,000	857,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: ***Application of PEM to Rare Ecosystem Inventory***

Originators:

Name(s): Del Meidinger, Andy MacKinnon Organization: Research Branch, MoF
Telephone & Fax: 387-6688 fax: 387-0046
E-mail Address: Del.Meidinger@gems2.gov.bc.ca

Project Summary

Predictive Ecosystem Mapping (PEM) is a method of predicting ecosystems on the landscape. Rare ecosystem inventory is essential to meet certification criteria. PEM may provide a useful starting point for a cost-effective rare ecosystem inventory. This project will assess the use of PEM in one study area for the identification of rare ecosystems.

Status

New project. However, assessment of present rare ecosystem inventory methods is a CRII-funded project for 2000-01.

Project Details:

Background: Government has a statutory responsibility to manage rare ecosystems as defined in FPC and other legislation. In addition, all major certification initiatives require planning to protect rare ecosystems. For example, the Forest Stewardship Council's Principles and Criteria define High Conservation Value Forests (in part) as "forest areas that are in or contain rare, threatened or endangered ecosystems".

PEM models begin with compilation of existing digital data (e.g., Forest cover, TRIM, geology, terrain). The digital data set could be used to identify sites that are likely to be rare. This project would use digital data with the EcoGen model to predict rare ecosystems and sites and then develop a field sampling procedure to validate the predictions.

Objectives: Assess PEM model's ability to predict rare ecosystems and sites and validate with field sampling procedure.

Scope: Project is provincial in nature, but will be conducted in one area.

Clients: Immediate clients are forest managers considering using PEM to conduct rare ecosystem inventory for certification requirements. Will also assist provincial managers in determining a cost-effective rare ecosystem inventory.

Decision/Ministry objectives supported: Project supports ecosystem mapping, criteria and indicator, landscape unit planning, and managing identified wildlife initiatives.

Outputs to date if continuing: new project.

Deliverables:

March 2002: Validation of PEM model to predict rare ecosystems. Method of field sampling to validate PEM prediction of rare ecosystems.

Partners/Linkages:

Rare ecosystem inventory is a concern for forest planners and the Conservation Data Centre. This project will provide critical information on the effectiveness of a cost-efficient method of rare ecosystem inventory. This project is linked to other projects: Reconnaissance Inventory of Rare Ecosystems, Sunshine Coast Sensitive (Rare and Fragile) Ecosystem Inventory, and Predictive Ecosystem Mapping, in general. Conserving rare ecosystems is one component of sustainable forest management, and this project will help us address Forest Renewal BC's Strategic Objective 3 (under "Strengthen Sustainable Forest Management") of "invest[ing] in the development of relevant, useable, timely information and tools keyed to achieving sustainable forest management".

Consequence of Not Funding:

Funding to evaluate PEM for rare ecosystem inventory is not available. Failure to fund will mean that the success of a possible inventory method will be unknown.

Timing Constraints:

Project requires funding by May 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		42,000			42,000

Project Team includes Andy MacKinnon, Will MacKenzie and Marvin Eng of the Research Branch, Ministry of Forests, and Samantha Flynn of the Conservation Data Centre, Ministry of Environment, Lands and Parks.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Spatial Units of Fish Population Diversity: Identification and Mapping

Originators:

Name(s): A. Tautz, T. Down, D. Tredger Organization: BC Fisheries
Telephone: 604-222-6763 Fax: 604-660-1849
E-mail Address: Art.Tautz@gems2.gov.bc.ca

Project Summary:

Using the results of previously funded FRBC research, this project will develop operational methods to identify and map spatial boundaries of genetically distinct fish populations. These "conservation units", which are currently being defined in policy by both the federal and provincial fisheries agencies, represent the basic framework for monitoring the status and sustainability of forest dependent fish populations. Provincial species to be considered under this proposal include those of special concern including steelhead, interior rainbow trout, Arctic grayling, Dolly Varden, anadromous cutthroat trout and Bull Trout. Future integration of federal policy and federal species into this framework is considered a likely outcome of ongoing initiatives under the Canada BC Fisheries Agreement. This project contributes to the strategic objectives of FRBC and its partners by setting the baseline for monitoring the Species Diversity and Genetic Diversity elements of the Conserving Biological Diversity criteria.

Status

New (applies previous FRBC research projects)

Project Details:

Background:

It is well recognized that most of the genetic variation in fish is found within species, rather than between species, as is the case for wildlife (e.g., summer and winter steelhead). As a result, conservation biology principles and practices related to defining the status and sustainability of fish populations are fundamentally different from the techniques applied to birds, mammals and amphibians.

Studies of genetic variation in forest dependent fish species have been conducted by research scientists for the past 3-5 years, and while these studies are not yet complete, there is sufficient information available to begin to use the results in an operational context.

This project will result in the development of web based maps predicting the coarse scale distribution of both fish species and fish "conservation units". These "conservation units" act like sub-species and are generally acknowledged as the fundamental units for measuring the genetic health of fish populations managed by both federal and provincial governments.

Species for which genetic data is available on a province-wide basis include steelhead, rainbow and anadromous cutthroat trout, Dolly Varden, Arctic grayling and Bull Trout. These species are also those of special concern and are ranked as highly dependent forest species.

It is neither practical nor desirable to require intensive genetic and/or biological sampling for all forest dependent species on a provincial scale. Consequently, considerable emphasis will be given to using spatial and statistical modelling, scientific expert opinion and regional knowledge to produce defensible methods and results on a cost-effective basis.

Objectives:

1. summarize existing inventory information and expert opinion to define distinct populations and units of conservation for forest dependent fish species.
2. Define gaps in baseline knowledge (e.g., requirements for field sampling; genetic analyses).
3. Incorporate federal and provincial wild salmon and wild fish policies into a useable planning and operational framework.
4. Develop and test methods for the production of the web based maps of fish conservation units using functional stock aggregations and/or a variety of genetic algorithms.

Scope: provincial

Clients:

BCFisheries/MELP and DFO requires this information to make assessments regarding the status and sustainability of fish populations. The network of stakeholders and the general public, inculding MOF and forest licensees, will ultimately be the clients.

Decision/Ministry objectives supported:

Spatial distribution and status of species "conservation units" will input to decisions regarding strategic land use plan implementation and the federal "Species at Risk" legislation. Defensible fish "statusing" will have implications for certification. Supports BC Fisheries objectives to *Protect and rehabilitate native fish populations*, and to *Protect and rehabilitate habitat to conserve the productive capacity of aquatic ecosystems.*

Outputs to date: n/a

Deliverables:

1. web based maps predicting the coarse scale distribution of both fish species and fish "conservation units" for measuring the status of fish populations. Species to be considered include steelhead, rainbow and anadromous cutthroat trout, Dolly Varden, Arctic grayling and Bull Trout. The first year will focus on developing the system using Bull Trout and steelhead examples.

Partners/Linkages:

Federal Department of Fisheries and Oceans is defining "conservation units" for salmon species. This project will capitalize on FRBC investments in research and inventory, and similar work funded through the Habitat Conservation Trust Fund.

Consequence of Not Funding:

The fundamental units for monitoring the status and sustainability of fish will not be defined.

It is well recognized by provincial fisheries agencies, DFO and stakeholder groups that most of the genetic variation in fish is found within species, rather than between species. "Conservation Units" based on biogeography and genetics define the fundamental units for conservation. Conservation units found "at risk" through inventory and monitoring programs will have to be dealt with to ensure that the species conservation unit is not to put further at risk.

If we don't do anything to define conservation units it could be argued that we are not doing anything to collect baseline information to determine the status of the fundamental units of interest for biodiversity purposes. This may affect arguments for certification.

Timing Constraints:

Definition of conservation units can start concurrently with population monitoring activities.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
750,000	Yes; $ not available	65,000	130,000	130,000	325,000

Past related investment in FRBC Research and in regional inventories of Bull Trout (identified wildlife). Related work has also been conducted with funding from the Habitat Conservation Trust Fund.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: Aquatic and Riparian Ecosystems: Classification for Productivity and Biodiversity

Originators:

Name(s): D. Tredger   Organization: BC Fisheries
Telephone: 387-9588   Fax: 356-1202
E-mail Address: Dave.Tredger@gems4.gov.bc.ca

Project Summary

This project will utilize existing information and example systems from other jurisdictions to develop a hierarchical aquatic ecosystem classification framework and system(s) for B.C. Initial work will focus on defining the scope and design of a classification system, and on completion of discrete components within the hierarchical system. The classification system will provide a baseline documenting the amount and distribution of aquatic ecosystem types for application to the monitoring of productivity and biodiversity. This project contributes to the strategic objectives of FRBC and its partners by providing a baseline for monitoring the status of aquatic ecosystems for input to the Ecosystem Diversity indicator of Conservation of Biological Diversity.

Status

New, however this project builds on previous work done by the Aquatic Inventory Task Force, FRBC Research and Resources Inventory programs, and the Corporate Resource Inventory Initiative.

Project Details:

Background

Currently no accepted aquatic ecosystem classification system exists for B.C. In 1994 the Aquatic Inventory Task Force of RIC proposed a hierarchical inventory framework pointed at classification. The proposed hierarchy consisted of ecoregion, biogeoclimatic unit, aquatic ecosystem, stream segment/lake, channel/lake units and microhabitat, based on a review of literature and existing systems. The watershed unit linking aquatic and terrestrial environments is fundamental to the classification system as aquatic environments and their biological communities are dependent upon biogeoclimatic conditions in the surrounding watershed. While the classification system has not been pursued by the AITF, there is sufficient information available to complete the hierarchical framework and to obtain a picture of ecosystem types for some levels in the hierarchy. Work has been done on classification of some components that fit within the proposed hierarchy for a variety of business needs. For example, work has been done regarding watershed classification and stream reach classification as part of the FRBC Resources Inventory and Watershed Restoration Programs, and Forest Practices Code implementation. A system for describing stream habitat types has been adopted by the American Fisheries Society. Aquatic community classification frameworks for freshwater conservation have been developed and tested in other jurisdictions[1]. In addition, province-wide datasets are now available that address the higher levels of the hierarchy (e.g., B.C. Watershed Atlas, aquatic eco-zonation; hydrological zonation and the 1:50k map-based habitat (lake and stream reach) analysis) that will permit a high level summary of ecosystem (habitat) types and distribution in B.C.

Objectives:

The overall objective of this project is to create an aquatic ecosystem classification system for B.C. that is consistent with the Ecological Classification Framework (Harcombe, in prep.). The classifications will be used to provide an overall context for indicators of ecosystem diversity, and to apply knowledge gained in individual watersheds in a broader context.. The project will work towards this as follows:

1. Review the hierarchical classification framework to confirm the scope, design and feasibility of completing a classification system. This will investigate systems in use in other jurisdictions for application to B.C.
2. Use existing province-wide data exists to provide a broad (e.g., 1:50,000) description of aquatic ecosystem (habitats) and their distribution in B.C.
3. Complete classification systems for components of the system that are well advanced and consistent with the hierarchical framework. These components are needed to group similar ecosystems systems for describing land use impacts and monitoring of indicators.
4. Recommend inventory standards to operationalize the classification framework, within the defined scope.

Scope: provincial

Clients: Ministry's of Fisheries, Forests and Environment, Lands and Parks.

Decision/Ministry objectives supported:

Protect and rehabilitate native fish populations; Protect and rehabilitate habitat to conserve the productive capacity of aquatic ecosystems (BCFisheries).

Deliverables:

1. Report defining the scope and components of an aquatic habitat classification framework for B.C. (March 31, 2002).
2. Report and maps describing aquatic habitat types and distribution at 1:50,000 scale using available province-wide data (March 31, 2003).
3. Reports describing components of classification system:

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[1] e.g., Freshwater Conservation in the Great Lakes Basin: Development and Application of and Aquatic Community Classification Framework. The Nature Conservancy. 1998

- Watershed classification (March 31, 2002).
- Stream reach classification (March 31, 2003).

4. Report recommending inventory requirements for implementation of the framework (March 31, 2004)

Partners/Linkages:

Partners include the Conservation Data Center and the Nature Conservancy of Canada. This project will build on work that has been done through CRII, FRBC and for the Forest Practices Code. Linkages will be pursued with terrestrial/wetland ecosystems classification.

Consequence of Not Funding:

We will remain unable to describe indicators of ecosystem diversity. We will be unable to apply knowledge gained in individual watersheds in a broader context.

Timing Constraints:

Results of this project and its components can be applied immediately on completion.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		80,000	60,000	40,000	180,000

Past investment in relevant projects has been provided in programs funded by FRBC Watershed Restoration Program, Research Program and the Fish-Forestry Interaction Program. The amount is in the order of $100,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: Validation and Adaptive Management of Forestry Practices in the Riparian Management Areas of Small Fish Streams in the Central Interior of BC

Originators:

Name(s): Peter J. Tschaplinski   Organization: Research Branch, Ministry of Forests

Telephone: (250) 387-3025; Fax: (250) 387-0046
E-mail Address: Peter.Tschaplinski@gems4.gov.bc.ca

Project Summary

The responses of small fish streams (Forest Practices Code class S4) to current riparian management practices will be determined in selected districts in the Prince George and Cariboo Forest Regions. The results will be used to (1) validate Prince George District Manager's targets for streamside tree retention and shade for small fish streams and (2) make recommendations for future riparian management strategies and tree retention targets in the BC north-central interior. The study will consist of synoptic surveys of riparian sites that will complement existing before-treatment (baseline) vs. after-treatment (response) studies currently under way in Prince George District (Dave Maloney, Prince George Forest Region) where tree-retention targets for harvesting in riparian management areas are being implemented to achieve specific habitat protection objectives under the cooperation of local licensees. The synoptic surveys will consist of a retrospective monitoring of streams treated by the following known riparian practices applied under full Forest Practices Code riparian standards and guidelines between 1997 and 1999: (a) riparian cutblock-boundary "reserves" 30-m wide or wider, (b) fixed-width riparian reserves 10-m wide (c) variable-width reserves (0 – 10 m wide and averaging < 10 m wide along the stream), (d) partial tree retention within the 30-m RMA, and (d) clearcut harvested RMAs. This project primarily supports the Strengthening Sustainable Forest Management (SSFM) strategic objective through defining standards for environmental baselines in regard to terrestrial and aquatic ecosystem condition and water quantity/quality. Because this project looks at riparian condition and the response of streams to shade targets, it is also relevant to the Enhancing Environmental Values (EEV) strategic objective with emphasis on the validation of Watershed Restoration Program treatments and the promotion of strong environmental stewardship.

Status New (complements and expands a related study in Prince George Forest District)

Project Details:

Background: There is uncertainty that current riparian management standards and guidelines under the Forest Practices Code adequately protects our smallest fish streams (class S4). The Department of Fisheries and Oceans has expressed concerns about the possibility of harmful short-term and long-term alterations to fish habitat in these streams as a result of removal of riparian trees during forest harvesting. As well, both the Ministry of Forests and the Ministry of Environment, Lands and Parks wish to evaluate whether forest practices currently implemented adjacent to these streams are consistent with the objectives of the Forest Practices Code as described in the Riparian Management Area Guidebook. Provincial agencies are interested in testing the response of small fish streams to riparian tree retention and shade targets in an adaptive management approach.

Objectives: In two MoF Regions (1) determine from retrospective studies the range in stream and fish habitat responses to current riparian management practices around S4 streams; and (2) apply the results to assist in the evaluation of specific riparian tree retention and shade targets implemented in operational harvesting trials under the Prince George District Manager's Policy for S4 fish streams. Response variables will include changes in shade, water temperature, channel morphology, large woody debris abundance and distribution, and fish habitat characteristics.

Scope: Emphasis on BC north-central interior with potential provincial application.

Clients: MoF Ops. Div. managers and planners in regions and districts; MoF Executive; MoF Forest Practices Branch; MoELP Executive, Resources Inventory and Habitat branches, Regional habitat specialists; FPC Implementation Teams; FRBC Watershed Restoration Program; Forest Industry planners, managers, and field practitioners.

Decision/Ministry objectives supported:

1. Establishment of environmental baselines for strategic resources management
2. Assist in developing and maintaining policies, processes and provincial standards to provide the most cost effective method of attaining resource management goals.
3. Analyzing information and recommending improvements to field practices based on effectiveness evaluation and adaptive management.
4. Support the restoring of 20 % of the highest priority watersheds in BC and promote strong environmental stewardship.

Deliverables: Validation of the effectiveness of current riparian management practices for maintaining the channel and fish habitat characteristics of small fish streams. Evaluation of the effectiveness of Prince George District targets for riparian tree retention and shade for the purpose of fish habitat and water quality protection. Recommendations for future riparian management targets based on the results of the post harvest monitoring program (on-going to 31 March 2003).

Partners/Linkages: MoF Forest Regions and representative Districts (e.g., Phil Zacharatos, DM; Prince George District Manager's Policy for S4 Streams); MoELP Habitat Branch (Greg McKinnon, Richard Thompson), MoELP Regions; Forest Licensees (to be identified); P. Beaudry and Associates, Prince George; Department of Fisheries and Oceans, Science Branch (Erl MacIsaac)

Consequence of Not Funding: Continuing uncertainty in the adequacy of existing S4 stream management effectiveness for maintaining water quality and healthy fish habitats. Continuing recommendations from DFO Habitat Protection managers to forest licensees that nearly 100 % tree retention occur adjacent to these small streams unless acceptable technical rationale is provided.

Timing Constraints: No timing limitations identified other than the need to initiate synoptic surveys during the first summer of year 1, and obtain at least two years of replicate stream-riparian response data. For two years of fully replicated observations, funding distributed equally across two years is preferred (see proposed budget).

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget (2 Options; #1 is preferred)			Total Proposed
FRBC	Other	01-02	02-03	03-04	
none	PG District Study (related: ~$60K)	Option 1: $119,000	$119,000	0	$238,000
		Option 2: $88,000	$150,000	0	$238,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Review and Analysis of Environmental Baseline Data from The Carnation Creek Fish-Forestry Interaction Study

Originators:

Name(s): Peter J. Tschaplinski Organization: Research Branch, Ministry of Forests

Telephone: (250) 387-3025; Fax: (250) 387-0046
E-mail Address: Peter.Tschaplinski@gems4.gov,bc.ca

Project Summary

The Carnation Creek Fish-Forestry Interaction Project contains biophysical datasets, both analyzed and unanalyzed, that have been collected for a period of 30 years. Review and analysis of long-term datasets on water temperature, climate, hydrology (including peak and base flows), stream morphology, hillslope-channel linkages, fish habitat and fish production will assist the establishment of environmental baselines for coastal BC by comparing 5 years of pre-harvest data with 6 years of during-harvest information and 19 years of post-harvest impact and recovery data. This project primarily supports the Strengthening Sustainable Forest Management (SSFM) strategic objective through defining standards for environmental baselines in regard to terrestrial and aquatic ecosystem condition, terrain stability, and water quantity/quality. Because data from Carnation Creek covers up to 30 years of environmental variability, they are ideal for the development of decision support/analytical tools and techniques for determining environmental baselines. This project is also relevant to the Enhancing Environmental Values (EEV) strategic objective with emphasis on the validation of Watershed Restoration Program treatments and the promotion of strong environmental stewardship.

Status Continuing (with new analytical component)

Project Details:

Background: The Carnation Creek study initiated in 1970 to determine the short-and-long-term effects forest harvest practices on watershed biophysical processes is currently focused on the long-term recovery of these processes from historic harvest practices. This project has generated the longest continuous datasets on fish-forestry interactions available anywhere, but significant review and analysis of existing climate, hydrology, and biological response data are yet to be performed. It is desirable that all outstanding data be reviewed and analyzed completely to identify environmental baselines and subsequently refine a prototype Fish-Forestry Interaction Program Management Model (FFIP-MM). This assessment tool is intended to assist forestry planners to evaluate the potential impacts of different harvest scenarios in watersheds of given physical baseline attributes. This existing watershed and stream-channel impact model requires improvements to (1) parameterization for in-channel (downstream) rate of sediment and debris delivery, and (2) consequent rate of change of channel impact states. It also needs empirical validation of its expert-rules-based parameters for fish-habitat capability by obtaining empirical data from Carnation Creek other coastal streams on Vancouver Island and the Queen Charlotte Islands.

Objectives: Fully analyze available long-term datasets on climate, water temperature, and changes in streamflow, channel morphology, fish populations and habitats for establishing environmental baselines. Incorporate biophysical data for the expansion and refinement of FFIP-MM for testing baselines and validation of forest harvest practices.

Scope: Regional (small watersheds, coastal BC)

Clients: MoF Ops. Div. managers and planners in regions and districts; MoF Executive; MoF Forest Practices Branch; MoELP Executive, Resources Inventory and Habitat branches, Regional habitat specialists; FPC Implementation Teams; FRBC Watershed Restoration Program; Forest Industry planners, managers, and field practitioners.

Decision/Ministry objectives supported:

5. Establishment of environmental baselines for strategic resources management
6. Assist in developing and maintaining policies, processes and provincial standards to provide the most cost effective method of attaining resource management goals.
7. Analyzing information and recommending improvements to field practices based on effectiveness evaluation and adaptive management.
8. Support the restoring of 20 % of the highest priority watersheds in BC and promote strong environmental stewardship.

Deliverables:

Year 1 (to March 31, 2002): Fully analyzed long-term datasets on climate, water temperature, and changes in streamflow, channel morphology, fish populations and habitats at Carnation Creek to identify and establish environmental baselines. Year 2 (to March 31, 2003): Working FFIP Management Model for testing baselines and validation of forest harvest strategies and practices. Year 3 (to March 31, 2004): Empirical validation/refinement of expert-rules-based model components for estimating impacts of forestry practices on fish-habitat capability (application of historic and new data from BC coastal streams).

Partners/Linkages:

MoF Vancouver Forest Region (Tom Millard); MoELP, Nanaimo (Doug Morrison); Water Survey of Canada (Bruno Tessoni); Huu-Ay- Aht First Nation; UBC (Michael Church); University of Western Ontario (Irena Creed); Weyerhaeuser Canada.

Consequence of Not Funding:

Provincial resource agencies will not have the full benefit of the longest-running continuous datasets on watershed parameters for the purpose of establishing environmental baselines for strategic resource management. Forestry managers and planners will not have the benefit of a model which will be able to assist in evaluating the consequences of forest harvest options including cutblock and road location within watersheds of given geomorphic and hydrologic attributes. FRBC's Watershed Restoration Program will not have the benefit of comparing effectiveness of WRP treatments against a baseline of natural rates of watershed recovery, or identify cost-effective restoration options.

Timing Constraints: No timing limitations identified.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
1995-2000: ~$950K	FRDA II or MoF /MELP/COFI : ca $100K/yr 1992-95	$65,000	$50,000	$50,000	$165,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project name: Fire history dataset analysis

Originators

Names: John Parminter
Marvin Eng

Organization: Research Branch, MoF
PO Box 9519, Stn
Prov Govt
Victoria BC V8W
9C2

Telephone: (250) 356-6810 (JP)
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Fax: (250) 387-0046

E-mail address: john.parminter@gems7.gov.bc.ca marvin.eng@gems5.gov.bc.ca

Project summary

This project addresses the strategic objective of strengthening sustainable forest management through the provision of summary statistics about historic wildfire activity, broken down by geographic area, administrative area or biogeoclimatic unit and general cause. As part of the environmental baselines component, provision of these statistics will aid forest, range, wildlife and protected area management. Knowledge of the historic regimes of natural and human-caused wildfires enables risk assessment, evaluation of the historic impacts of man on the environment and could be incorporated into timber supply models as reduction factors and/or probability functions. Landscape unit and other land use plans already incorporate generalized natural disturbance regime information and such planning processes would greatly benefit from the provision of more detail.

Status: New

Project details

Background: two existing databases, collectively called the "fire atlas," contain the known information about historic wildfire activity in B.C. The old fire atlas covers the period from 1919 to the early 1940s and consists of roughly 200 linen maps at several different scales. The new fire atlas (1520 mylar overlays) covers the early 1940s to 1988 and is at a scale of 1:125 000. Information on subsequent fires greater than 200 ha exists in digital form.

The data on these maps are being digitized by staff at the Northern Forestry Centre of the Canadian Forest Service and the digital data files will be available, following final quality control, during fiscal year 2000/2001.

Objectives: the objective is to analyze the provincial fire history dataset and summarize "landscape metric" information related to certain aspects of fire regimes (fire frequency, size and cause) as well as others such as shape and perimeter characteristics as a function of size. The analyses could be organized by geographic area, Natural Disturbance Type (1 - 5) or biogeoclimatic unit and the results would be published and/or displayed on a web site (such as the MoF, National Forest Information System and/or GeoConnections).

Scope: provincial in area; data from 1919 to 1988 for fires > 20 ha, after 1988 for fires > 200 ha – all broken down by general cause (lightning versus human).

Clients: all levels of the MoF and MoELP plus the forest industry.

Decision/Ministry objectives supported: risk assessment in the Protection Program and Timber Supply Review process, landscape unit and higher level planning, criteria and indicators.

Deliverables

Project phases will consist of: definition of project scope and client needs; data capture and organization; analysis and production of summary statistics. As a one-year project, deliverables will be due at the end of fiscal year 2001/2002.

Partners/linkages

The Canadian Forest Service is a partner through in-kind contributions of staff time and equipment use. Provision of MoF funding would trigger additional contributions from the CFS, who would use the results of the analysis in their fire management applications.

Consequence of not funding

Research Branch has no internal resources available to do this analysis. Risk assessment, Timber Supply Review and planning processes would have to continue to rely on general rather than specific estimates of the historic and expected future landscape-level impacts of wildfire. In some cases these general estimates are in excess of actual wildfire activity.

Timing constraints

Analysis depends on obtaining the complete digital dataset from the Canadian Forest Service. This should be accomplished without difficulty during fiscal year 2000/2001.

Past investment and proposed FRBC budget

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
None	CFS – unknown	$10,000			$10,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Rare Species (Identified Wildlife) Inventory (revised)

Originators:

Name(s):Andrew Harcombe/Syd Cannings
Organization: Conservation Biology Section, Resources Inventory Branch
Telephone 387-9798 ; FAX: 387-2733
E-mail Address: andrew.harcombe@gems2.gov.bc.ca

Project Summary

This project will use the rare species inventory protocol (see Rare Species Inventory Protocol proposal) to systematically support inventories using IWMS priorities and existing Conservation Data Centre data to help direct work. Headquarter specialists would oversee and quality assure the work, primarily carried out by contractors. All data will be captured in the Rare and Endangered Element data system already developed. Inventory would follow RIC standards or new standards developed by the protocol. Wildlife Habitat Areas will be designed if appropriate. At the present, almost all inventory has been supported with FRBC monies. This project will be a keystone for the strategic FRBC objectives of enhancing knowledge about forests and enhancing environmental values, focussing on endangered species. An analysis of significant data gaps will help drive priorities; this project is for the Environmental Baseline Component. As many gaps as financially possible will be addressed.

Status

Continuing, but being coordinated provincially rather that regionally

Project Details:

Background: Rare species named as Identified Wildlife need to be inventoried within ecological areas rather than administrative units. Clarification of their present status and implications of forest and range management processes can only be determined by inventorying a species in all its range. For rare species, there are often less than 20 provincial occurrences. Most of the dollars in the past have focussed on a few high profile species (marbled murrelet, northern goshawk) and the remaining 150 species have received little attention. There are an additional 70 species that lack enough information to assess their eligibility as Identified Wildlife

Objective

1. create working plan so that rare species inventory is based on clear provincial priorities and significant data gaps (linked to Government Corporate baseline Registry project)

2. determine potential impacts of range and forest practices for poorly known endangered species,
3. inventory higher priority species and delineate candidate Wildlife Habitat Areas so that Identified Wildlife Management Strategy can be implemented

Scope: provincial

Clients: regional Ministry of Environment and Forests staff; forest industry; other environmental partners

Decision/Ministry objectives supported: Natural Diversity for protecting, maintaining, and rehabilitating BC's native wild species and their habitats

Outputs to date if continuing: scattered projects for a few rare species.

Deliverables:

1. inventory working plan identifying high priority gaps: October 1, 2001
2. inventory and species accounts for additional Identified Wildlife species requiring species accounts: ongoing to December 2003
3. set of Wildlife Habitat Area candidates for high priority species: ongoing to March 31, 2004

Partners/Linkages:

Government staff, supported by base and CRII funding, will coordinate this project. Regional Rare and Endangered Specialists will help coordinate the work. Partners will include industry and non-government environmental organizations. It is hoped that federal government funding will come available if Species at Risk Act passes. Linkage to Criteria and Indicators for Sustainability through the Rare Species Inventory Protocol.

Consequence of Not Funding:

Ability to identify and protect rare and endangered species on public lands will be incomplete, and certification requirements will not be met

Timing Constraints:

Inventory fieldwork needs to be done during the late spring/summer/early fall . Planning for gaps can be done at any time. This is a multi-year project, described here for 3 years.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
+$1,000,000	+$200,000	$155,000	$250,000	$250,000	$655,000

Note: This unusual request for a HQ-controlled inventory is being made because the regular route of delivering rare species inventory regionally is not efficient. Biological expertise for many species does not reside in regions. Species are not distributed within administrative units, so inventory needs to be coordinated across regions and districts to encompass the full distributional range. Results to date have resulted in :

- scattered projects that do not always allow review of provincial status
- data not necessarily useful for implementation of IWMS;

- priorities not determined from a provincial rare species perspective;
- little funding used for some high priority Identified Wildlife candidates, such as vascular plants and invertebrates

New federal Species at Risk legislation will mean that the Province and its resource users will have to have a more consistent approach to rare species management; accurate information on present status is critical to ensure management focus is on species that really need that effort. To date, there are many species that cannot as yet be said to be secure. Three years will not be long enough to complete this project.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Community Watersheds Environmental Summary

Originators:

Name(s): George Butcher Organization: Water Inventory Section, RIB
Telephone: 387-9515; FAX 356-5496 E-mail Address: george.butcher@gems7.gov.bc.ca

Project Summary

Produce strategic environmental summaries for all community watersheds to report on status of attributes such as land use, roads, riparian cover, ecological status, and slope/aspect/elevation. This information is required for water quality assessment and objectives setting in community watersheds (which is a Forest Practices Code requirement) and can be used for reporting on trends and state of the environment and forests in community watersheds.

Status: new

Project Details:

Background: Under the Forest Practices Code, forest companies are obligated to ensure that their activities in community watersheds do not result in water quality objectives (WQO's) being exceeded. The establishment of WQO's requires strategic level overview of existing watershed data which is presently not available for most community watersheds in their entirety. This project will provide the information needed to set WQO's and for use by other resource management processes including reporting on the status and environmental trends within community watersheds.

Objectives:

1)recompilation of existing GIS databases using community watersheds as the template

2)environmental attributes for each community watershed in spreadsheet format

3)easy to use graphics of map features pertinent to water protection for all community watersheds

Scope provincial

Clients MoF, MELP, MofHealth re: Drinking Water Audit by Auditor General

Decision/Ministry objectives supported:

- Community Watershed Water Quality Objectives
- Useful for state of the forest and environment trend reporting
- Supports strategic goal of "Enhancing Environmental Values" component: "There will be cleaner drinking water in more than 20 community watersheds"

Deliverables:

Dec. 2001- spreadsheet summaries of attributes for all community watersheds and electronic map folio of inputs pertinent to water resource protection.

Partners/Linkages:

MoF
Geographic Data BC
Linked to the Auditor General's Recommendations for Drinking Water

Consequence of Not Funding:

Timing Constraints:

None

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget Jan.15/01			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$20,000			20,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: Water quantity baseline information

Originators:

Name(s): Wilf Dreher, Bruce Letvak Resources Inventory Branch – MELP
Telephone 250 953-3811 E-mail: wilf.dreher@gems9.gov.bc.ca
Fax 250 356-5496

Project Summary

Provide support to the provincial hydrometric network to ensure baseline water quantity data is collected. Gap analyses completed for most regions in the early stages of the Framework program are assuming the continuation of availability of information currently provided by the existing hydrometric network. This information is a basic cornerstone of any resource management activity; sustainability of forest management cannot be demonstrated without this basic information.

Status

This is a continuing project.

Project Details:

Background

FRBC funding has been applied to the operation of this network over the period of the framework program. The program is funding a loosely defined forest baseline hydrometric network of some 60 hydrometric stations. These are stations of primary interest to the forest industry, but there is a wide range of other stakeholders who have an interest in this program. Also, the forest industry's stake in this program reaches well beyond the forest based network. The regional stations installed as result of the gap analyses are built on top of the base network. The regional component relies on this network, without it, the previously completed gap analyses would be rendered irrelevant.

Water quantity information is collected at strategically chosen locations in order to provide the best possible baseline information at optimum cost and utility to stakeholders..

Objectives

- Provide province wide baseline water quantity information
- Integrate forest baseline network in existing hydrometric network

Scope (local, regional or provincial)

Provincial

Clients

- Forest industry and other resource industries
- Prov. Ministries
- Environment Canada, DFO,
- Environmental groups
- Research community
- Water users, public, etc.

Decision/Ministry objectives supported

Water quantity is the basic source of hydrologic information supporting all broad ministry objectives of protection of ecosystems, sustained and healthy water resource and providing sustainable social, economic and recreational benefits.

Outputs to date if continuing

Access to province-wide hydrometric data continually gathered since the 1920's and 30's. Web-access to real time data for continually monitored stations.

Deliverables:

Provide annual summary of information for the forest baseline hydrometric network
Provide web access to real time data

Partners/Linkages:

Main partner is Environment Canada, who operates the network and provides approx. 1/3 of the funding. Dozens of other partners, such as industries, water licencees, local governments, B.C. Hydro, etc. Total cost of operating the network is approx. $3.8M, this program is funding less than 10 % of the total network.

Consequence of Not Funding:

Significant data gaps would be created by discontinuing the funding of the forest baseline network, due to the integrated nature of the program, many other stakeholders would be affected.

In the long run, data gaps would make the hydrologic database increasingly incapable of supporting the many forest management aspects relying on water resource information and the industry would find it very difficult to pursue sustainability certification as basic information on one of the fundamental non-timber values would be seriously lacking.

There is currently no practical alternative method or approach available to provide this information cost effectively and to a consistently high standard.

Timing Constraints:

Continuing project.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$1.3M (since 97)	$15M (since 97)	$229k	$350k	$350k	$929 k

Sustainable Resource Benefits Component

Vision

The vision for this component is:

> *To simplify and improve the quality and consistency of strategic forest planning decisions and processes through the development of a suite of decision-support tools to model the effects of forestry management actions which both:*

- *maximize socio-economic resource benefits for multiple values, and*
- *meet standards for sustainability*

The projects in this component support Forest Renewal BC's Strengthening Sustainable Forest Management strategic objective by developing tools and information to link environmental and social values with economic values in strategic planning processes.

This component satisfies all of the eligibility criteria, performance targets and linkage requirements as follows:

1. This component will:

- Enhance, consolidate and adapt models that forecast attributes for wildlife habitat;
- Model ecosystem and biodiversity attributes as indicators of ecosystem condition;
- Develop techniques for spatially-explicit resource analysis that will not only improve the quality of timber supply analysis, but will enable more explicit and appropriate representation of habitat and biodiversity values in resource analysis;
- Involve tremendous collaboration among timber supply analysts, habitat biologists, and ecologists.

2. This component complements and facilitates regional investments by addressing gaps in regional information needed for TSR and implementation of SLUPs.

3. This component is incremental to the ministries existing programs by virtue of the development of new tools and techniques (i.e. spatial analysis).

4. Time-bound deliverables and performance measures are defined in the attached list of recommended projects.

5. The planning process for this component, under MoF leadership, involves a peer group comprised of the Chief Forester/Timber Supply Branch, LUCO (LRMPs), the Resources Inventory Branch (RIB) of both MoF and MELP, and BC Fisheries IMB.

6. Partners in implementation of this component will be Forest Renewal BC, MoF, MELP, BC Fisheries, and regional SSFM planning groups.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Sensitivity of Timber Supply to Natural Disturbances

Originator:

Marvin Eng
(250) 387-2710; fax 387-0046
Ministry of Forests, Research Branch
Marvin.Eng@gems5.gov.bc.ca

Project Summary

This project will provide a tool designed to strengthen sustainable forest management. Currently, natural disturbances are either not included in timber supply models or they are included as events that are evenly spread throughout space and time. These assumptions are not realistic and as a result timber supply predictions based on them may be in error. I intend to provide a tool that will allow Timber Supply Branch to more realistically incorporate sensitivity analyses of the occurrence of natural disturbances in the timber supply review process.

Status

New

Project Details:

Background

Natural disturbances need to be included in timber supply predictions primarily to estimate non-recoverable losses. Models designed to predict timber supply through time generally treat natural disturbances as temporally and spatially homogeneous events. That is, the models assume that natural disturbances will occur at a constant level throughout the planning period and will be evenly distributed across the operable landbase. It is often assumed that natural disturbances will not occur in the inoperable landbase. These assumptions may cause several problems with predictions of timber supply:

1. Because natural disturbances and forest harvesting both occur in a spatially heterogeneous fashion our forest harvesting activities may be creating landscapes that will be more or less susceptible to natural disturbances in the future.
2. Because natural disturbances do occur in the inoperable landbase we may be incorrectly estimating the contribution of the inoperable landbase to the provision of various forest cover requirements.
3. The predictions of spatially implicit timber supply models assume that a modeled harvest level will be achieved during every period. Spatially explicit timber supply models not only make that assumption but they also assume that the harvest will

come from specific areas of the landscape during specific times in the future. The occurrence of natural disturbances may violate these assumptions under certain circumstances. It is not clear how resilient the predictions are to the violation of the assumptions.

Objectives

1. Review and synthesize the current state of understanding regarding the incorporation of natural disturbances into timber supply models and current methods of estimating non-recoverable losses. Modify and/or develop methods of more realistically assessing the sensitivity of timber supply predictions produced by FSSIM to natural disturbance patterns. Pilot the methods developed in 2 (above) in three Timber Supply Areas with different types of natural disturbances. Design a process for routine incorporation of these sensitivity analyses in the Timber Supply Review process.

Scope (local, regional or provincial)

This project has provincial implications.

Clients

Chief Forester; Timber Supply Branch

Decision/Ministry objectives supported

This project will enable the Timber Supply Branch to provide better information to the Chief Forester for his determinations of the allowable annual cut, particularly with respect to the estimation of non-recoverable losses.

Deliverables:

1	Final report summarizing the review and synthesis of the existing methods	- March 31, 2002
2	Demonstration of methods for sensitivity analysis for selected natural disturbances (At least fire and several insect pests).	- March 31, 2002
3	Demonstration of methods for sensitivity analysis for remaining natural disturbances (insect pests, windthrow root rot, etc.).	- June 30, 2003
4	Pilot sensitivity analysis in 2 TSAs	- March 31, 2003
5	Process for routine incorporation of sensitivity analysis	- March 31, 2004

Partners/Linkages:

Partner: Peter Fuglem; Ministry of Forests, Timber Supply Branch.

Linkages: This project will draw on the substantial body of timber supply modeling research and development that is currently being carried out under the auspices of the Enhanced Forest Management Pilot Projects (specifically Robson Valley and Invermere) and the Innovative Forest Practices Agreements.

Consequence of Not Funding:

Timber Supply Branch may continue to include natural disturbances in timber supply predictions as temporally and spatially homogeneous events. This may result in an incorrect estimate of the sensitivity of timber supply predictions to temporal variations in non-recoverable losses.

Timing Constraints:

None

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$40,000	$66,000	$40,000	146,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Review of methodologies in timber supply modelling for habitat\biodiversity objectives

Originators:

Name(s): Jeff Stone
Organization: Timber Supply Branch
Telephone: 952-6628 *Fax:* 953-3838 *E-mail:* jeff.stone@gems7.gov.bc.ca

Project Summary

This project is to assess current modelling practices for habitat/biodiversity objectives used within the Ministry of Forests Timber Supply Review for Allowable Annual Cut determination. Two components of the modelling process will be assessed: (1) the translation of habitat/biodiversity management objectives to forest estate modelling constraints and (2) limitations and biases of current modelling practices. Improved communication of habitat/biodiveristy objectives by forest managers/biologists to forest modellers/analysts will result in more effective model use in decision processes.

Status: New

Project Details:

Background: Timber supply analysis, as is currently used within the Ministry of Forests Timber Supply Review, requires that management objectives for habitat/biodiversity be simplified to the capabilities of the model. The effects of this simplification in terms of management objectives is not clearly understood by forest managers, biologists, or analysts. With the increased emphasis on achieving a balance between timber supply and conserving non-timber resources, such understanding is necessary: (1) to improve the input of habitat/biodiversity experts and use of such inputs by analysts in current forest estate modelling processes, (2) to better inform decision makers about habitat/biodiversity objectives, and (3) to direct the development of appropriate tools necessary for addressing habitat supply/biodiversity management.

This project has 2 components. First, a review of existing management practices for habitat/biodiversity objectives and how these are translated into forest estate modelling objectives will be conducted through a summary of existing literature and discussion with forest biologists, forest managers and timber supply analysts. Secondly, a modelling exercise will investigate limitations and biases within the current Ministry of Forests aspatial forest estate modelling environment that is used in decision processes such as Allowable Annual Cut determination and Land and Resource Management Planning.

Objectives: To improve forest practices and decision processes that achieve the goal of balanced sustainable management in British Columbia by furthering the understanding of forest estate level modelling for habitat/biodiversity.

Linkages and Support: This project expands on existing structure (i.e., Timber Supply Branch forest estate models) and compliments existing and proposed modelling initiatives that approach habitat/biodiversity management objectives from a habitat supply forecast rather than from a management constraint perspective. This project addresses identified strategies of the Forest Productivity Council Biodiversity Working Group Strategic Plan for incorporating biodiversity in forest management planning in British Columbia.

Scope: Provincial

Clients: Forest and environment managers, analysts, biologists, and planners.

Decision/Ministry objectives supported: Yes

Outputs to date if continuing: N/A

Deliverables:

- Review of current methodologies to include habitat\biodiversity objectives in forest estate/timber supply modelling in British Columbia in relation to management guidelines, forest practices, and known habitat requirements – March 31, 2002
- Summary of the limitations and biases associated with current timber supply modelling of habitat/biodiversity objectives with FSSIM through a modelling exercise – September 31, 2002
- A communication report for Forest Ecosystem Specialists and Timber Supply Analysts on identifying and modelling habitat/biodiversity related information with forest estate models with emphasis on the Timber Supply Review – December 31, 2002

Partners:

FRBC, Ministry of Forests, Ministry of Environment, Lands and Parks

Consequence of Not Funding:

Stewardship objectives may not be properly considered in decision processes that use forest estate models, such as the determination of Allowable Annual Cut and Land and Resource Management Plans.

Timing Constraints:

Start April 1, 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		40,000	25,000		65,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: ***Validation of EcoGen Model Outputs***

Originators:

Name(s): Del Meidinger, Don Morgan, Marvin Eng
Organization: Research Branch, MoF
Contact Telephone & Fax: 387-6688 fax: 387-0046
Contact E-mail Address: Del.Meidinger@gems2.gov.bc.ca

Project Summary

EcoGen is a Predictive Ecosystem Mapping (PEM) model. The model has been piloted on some project areas but requires field validation of model components. PEM is being promoted as part of the solution to reevaluating site productivity in B.C. Validation of model predictions and components will allow users greater confidence in the use of the model for site productivity assessment as well as other PEM applications (certification, wildlife habitat capability/suitability, habitat supply modeling).

Status

New project. However, model developed using FRBC Research funding and MoF base budget.

Project Details:

Background: EcoGen is a PEM model that has been developed over the past 5 years. It has been applied in several areas, but some model components require field validation. Validation will provide managers applying the model with a known confidence in the model predictions.

Objectives: Validate EcoGen Model Components through model runs and field validation data.

Scope (provincial): EcoGen is developed as a corporate model available to any resource managers or consultants in B.C. There are proposals to use EcoGen for districts and provincially.

Clients: Include forest managers requiring improved site productivity data for timber supply review and multi-resource managers requiring ecosystem data for various applications (see above).

Decision/Ministry objectives supported: Project supports PEM initiatives to assess site productivity and wildlife habitat values. Provides data to assist with PEM application decisions.

Deliverables:

March 2002: Validation of soil moisture sub-model and non-forested ecosystems image analysis sub-model.
2003-2004: Validation of additional sub-models, e.g., validation of site index prediction or wildlife capability assessment.

Partners/Linkages:

EcoGen is a joint project between the Prince Rupert Forest Region and Research Branch of the Ministry of Forests. The project presently has industry and MoF district partners (e.g., Morice and N. Coast Districts, Merritt IFPA). This project is linked to application of SIBEC to ecologically-based timber supply reviews and use of PEM for meeting ecosystem and wildlife habitat strategic planning. Cooperators on this project include Roger Wheate of The University of Northern BC (image analysis component) and Ann Morrison, Prince Rupert Region (soft-copy validation). This project links to any regional FRBC inventory projects proposing predictive ecosystem mapping.

Consequence of Not Funding:

PEM is being applied to large areas without adequate field validation of model components. Funding for model evaluation and validation of predictions will provide practitioners, end-users and developers of PEM with much better information on which to evaluate and improve PEM models. Failure to fund will restrict availability of validation data and impact further development and streamlining of PEM procedures. Based on the number and magnitude of PEM projects being proposed for BC, this data is urgently required.

Timing Constraints:

Project requires funding by May 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		70,000	78,000	55,000	203,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Validation and improvement of a cumulative effects/habitat-supply model for grizzly bears

Originators:

Name(s): Fred Hovey & Bruce McLellan Organization: BC Ministry of Forests, Research
Telephone & Fax: 250-837-7619, -7687 E-mail Address: Fred.Hovey@gems8.gov.bc.ca

Project Summary

The project will validate the cumulative effects/habitat supply (CE/HS) model for grizzly bears developed for FRBC project HQ96387-RE. This task will be accomplished by using existing data on grizzly bear habitat requirements collected in other areas of the province as well as similar data from Montana and Alberta. Existing data includes detailed information on grizzly bear ecology and GIS based maps of bear habitat, landscape classification, forest cover, road networks, and human settlement and use areas. This project contributes directly to FRBC strategic objective and HRMP component outline 3.3.3 by validating and testing a model that examines impacts of forest practices on grizzly bear habitat requirements and survival. The proposed project also strengthens and is complementary to an existing FRBC investment HQ96387-RE

Status

New

Project Details:

Background

Grizzly bears are among the most high-profile and sensitive species of large mammals in the province. Impacts of forestry and land management practices on grizzly bears in BC are not only a provincial, but also a global concern. CE/HS models of their requirements have been and are being developed to aid forest managers in mitigating impacts to their habitat from land management decisions and forestry practices; but these models have not been tested and their extension and application to areas other than to those in which they were developed has not been evaluated. This application addresses this issue directly by proposing a means of testing the FRBC sponsored CE/HS model and evaluating its extensibility as a tool that can be implemented throughout the province.

Objectives:

1. Testing and validation of CE/HS model
2. Improve CE/HS model given results from objective 1
3. Evaluate the model's applicability to other regions of the province.

Scope: provincial
Clients: MOF and MELP district managers and forest licensees.
Decision/Ministry objectives supported

Enables operational staff to maximize resource benefits for multiple values while meeting standards for sustainability.

Deliverables:

1. Testing and validation of CE/HS model (March 31, 2003).
2. Improvement to CE/HS model (March 31, 2003).
3. Report on evaluate the model's applicability to other regions of the province. (March 31, 2004).

Partners/Linkages:

This project links directly to existing FRBC project HQ96387-RE, the purpose of which is to construct a cumulative effects/habitat supply model of grizzly bears. Partners in this project include Parks Canada, MOELP, Montana Dep. Fish, Wildlife and Parks.

Consequence of Not Funding:

CE/HS models for grizzly bears *will* be used by forest and landscape managers, but without validation the efficacy of their use will be questionable. Others (NGOs) concerned with the welfare of grizzly bears may challenge the use of unverified models and disrupt forest harvesting: a scenario that is already happening in B.C. and the U.S.

Timing Constraints:

Start Date April 01, 2001
Completion Date: March 31, 2004

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$60,000	$66,000	$71,000	$197,000.00

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Verification and further development of existing habitat suitability models for mountain caribou

Originators:

Name(s): Dr. Bruce McLellan
Organization: MOF Research Branch
Tel: (250) 837-7767
E-mail:bruce.mclellan@gems9.gov.bc.ca
Fax: (250) 837-7626

Project Summary

Mountain caribou, a federally and provincially listed threatened species, are found scattered in low numbers throughout the wet-belt mountains of the interior of British Columbia. Because these caribou feed almost exclusively on arboreal lichen during winter, they require the old forests where these lichens are abundant. Integrating mountain caribou and forestry continues to be a major management challenge and has been the focus of significant research and inventory efforts in several areas. A habitat suitability model has been developed in the Columbia Forest District based on conditions found there (of FRBC Research project HQ96386-RE) but this model must be verified using data being collected elsewhere, and, if conditions differ, further developed to incorporated these differences. Having a verified model will enable managers to identify caribou habitat and predict changes in this habitat over time

Status

This is a new project but will based on products of FRBC Research project HQ96386-RE

Project Details:

Background: Integrating mountain caribou and forestry is a major management challenge in 11 Forest Districts in the interior of British Columbia. A GIS based habitat suitability model has been developed in the Columbia Forest District and the methodology is being exported to other districts. This model should be verified with data collected in the other districts and modified to match varying conditions.

Objectives – The objective of this project will be to verify and modify the mountain caribou habitat supply model so it can be linked to conditions in other districts.

Scope: Provincial

Clients: MOF, MOELP, and forest licensees

Decision/Ministry objectives supported:

Enables operational staff to maximize resource benefits for multiple values while meeting standards for sustainability.

Deliverables:

Preliminary habitat supply model for Golden portion of Columbia, Salmon Arm and Clearwater districts – March 31, 2002.
Final habitat supply model for Golden portion of Columbia, Salmon Arm and Clearwater districts – March 31, 2004.
Report on the use of the model.
Report outlining the process of further model development for other districts. (March 31, 2004)

Partners/Linkages:

MOF Research Branch, MOF Columbia, Clearwater and Salmon Arm districts. Parks Canada, Columbia Basin Fish and Wildlife Compensation Program, Downie Sawmills Ltd., Slocan Forest Products, Weyerhaeuser Ltd.

Consequence of Not Funding: The accuracy of caribou habitat mapping will be poor, leading to poor forest planning, and inefficient trade-offs between the economic requirements of the forests industry and habitat requirements of caribou.

Timing Constraints:

Start on April 1, 2001 and Finish on March 31, 2003.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$34,000	$35,000	$35,000.	$104,000.00

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: ***Environmental information and analysis for TSR***

Originators:

Name(s): Mike Fenger
Tory Stevens
Organization: Habitat Branch, Ministry of Environment, Lands and Parks
Telephone & Fax: (250) 387-9779; (250) 356-5104
E-mail Address: Mike.Fenger@gems3.gov.bc.ca

Project Summary

The purpose of this project is to ensure that environmental information and analysis is routinely brought forward in a timely manner through the various phases of the Timber Supply Reviews for Timber Supply Areas TSAs) and Tree Farm Licences (TFLs). This information and analysis is needed to provide information on environmental resources and forest practices and inform the Chief Forester on the short and long term implications of the rate of cut to the environment.

This project contributes important new information to one of the most significant decisions effecting sustaining a number of resource benefits from our forests. This project will support the strategic objectives of Forest Renewal and its partners as it improves the quality of decisions by informing the decision on forest harvesting. This project provides accountability through reporting on criteria to determine how well the rich biological legacy in British Columbia is being sustained by the proposed base case forecast.

Status

This is a new project.

Project Details:

Background

Ministry of Environment, Lands and Parks staff have been formally included in TSR for a number of years. During this period the participation of MELP staff in TSR has been uneven and the level of environmental information supplied variable. Thus the quality of the information and the amount of information being brought into TSR by MELP is inconsistent.

Objectives

The objective of this project is to develop a consistent level of input and coordination of environmental information from MELP into TSR. The project will increase the role of the Ministry of Environment, Lands and Parks through improved coordination and more active and consistent participation at all stages of review, including information packages, analysis and presentation of material within each TSR. The project will ensure that Ministry of Environment, Lands and Parks works more closely with Timber Supply Branch at the provincial, regional and district level to complete TSRs.

Scope (local, regional or provincial): Provincial
Clients: Interested public, industry, government, NGOs

Decision/Ministry objectives supported

Yes

Outputs to date if continuing: NA.

Deliverables:

1. Coordinate and provide support for all ongoing TSRs explicitly improving the environmental input on data, analysis and reporting. Develop a standard format for input analysis and reporting and complete the environmental section and analysis report for each TSR.	Year 1	June 2001
2. Continue the above but extend examples of completed product to staff and increase their participation.	Year 1 and 2	June 2002
3. Continue tasks above and prepare a report that assesses whether the increased coordination has been successful.	Year 2 and 3	June 2004

Partners/Linkages:

Ministry of Forests, Timber Supply Branch. TFL holders.

Consequence of Not Funding:

Without funding the it will be difficult provincially to demonstrate that harvest rates and practices are able to sustain the environmental resources of our biologically rich and diverse province. It will be become increasingly difficult to defend the continued harvesting of old growth forests in the absence of information or analysis on the impacts of harvesting environmental values. It may also be difficult to assess what policies are working and which may need review.

Timing Constraints:

None

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
	60,000	60,250	75 000	75 000	210 250

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Impacts of Fish and Fish Habitat on Timber Supply

Originators:

Name(s): Tony Cheong Organization: BC Fisheries
Telephone: 250-387-9585 Fax: 250-356-1202
E-mail Address: Tony.Cheong@gems1.gov.bc.ca

Project Summary

The purpose of this project is to improve the application of fisheries information in Timber Supply Analysis (TSA). This includes: improved stream classifications for more accurate reduction estimates and long-term timber harvesting land base projections; identifying methods to determine fish values in watersheds, and their application in timber supply sensitivity analysis; and review and validation of models for identifying temperature-sensitive streams, and the impacts of the varying management assumptions associated with these streams on timber supply. In conjunction with the TRIM Watershed Atlas, this project is an important component to a spatially-based Timber Supply Analysis.

Status

New. Portions of this project are a continuation of the RIC standard Reconnaissance (1:20 000) Fish and Fish Habitat Inventory and the QCI Fish-Forestry Interaction Program.

Project Details:

Background: TSR reports for many Timber Supply Areas have identified the lack of fisheries information in the analysis. Typically, the only fisheries related information in the analysis is in the form of a stream classification – and even then, fish-bearing status is typically identified using the gradient default. There are a number of different areas with respect to forest harvesting where fish may have an impact on timber supply, including stream classification, the identification of high value fish streams in higher level plans, and the identification of temperature sensitive streams (Timber Harvesting Practices Regulation 22(1)). The goal of this project is to improve the Timber Supply Review by identifying methods to incorporate the most accurate fisheries information available.

Objectives: The objectives of this project are to:

1) Update the FHAT20 model to improve stream classification predictions. This includes:

a) edits to the model, including improving the channel characteristics predictions (e.g., width, stream channel presence);
b) review of methods to extrapolate modeled information to unsampled areas to identify most time and cost efficient procedure – includes assessment of Trim Watershed Atlas (TWA), Reconnaissance phase 1 to 3 costs, and using 1:50 000 modeling;
c) update of the FISHMap tool (input and output of data to model);
d) verification of model results, including comparison of predicted channel network to "on-the-ground" network;

2) To assess productive capacity models to identify high value fish streams, including:
a) assessment of channel type/fish abundance relations;
b) species presence/habitat relations;
c) predictions of Fisheries-Sensitive Zones and sensitive areas.
3) To review and validate models for identifying temperature sensitive streams.
4) Pilot application of fish information in a Timber Supply Analysis.

Scope: Provincial

Clients: MoF, Forest Licencees, BC Fisheries, MELP, DFO, stewardship groups

Decision/Ministry objectives supported: Creating accurate depictions of the fish and fish habitat distributions will enable sound decision making in the planning process in a variety of areas, including the TSR, higher level planning process, and Forest Development Plan assessment.

Outputs to date if continuing: FHAT20 (version 1.1), FISHMap (version 1), FFIP Model.

Deliverables: (by objective)

1) a) Updated FHAT20 model: March, 2002
b) Procedures for Extrapolating Modeled Information: Dec., 2002
c) Updated FISHMap: March, 2002
d) Report on Accuracy of Modeled Results: Dec., 2003
e) Interim methods for Timber Supply Analysis: March 2003
2) a) review of past work, incorporation of new and existing data: March, 2002
b) model for TSA application: March, 2003
c) Report on field validation: Dec., 2003
3) a) Review of existing temperature models: March., 2002
b) Pilot to identify temperature sensitive streams: Sept., 2002
c) Identification of methods for TSA: March, 2003
4) Pilot project: Application of procedures in a TSA: March, 2004

Partners/Linkages:

This project is crucial in determining fish distribution and habitat characteristics over large areas – an important aspect for the Environmental Baselines component. It is also important as it provides information necessary for Fish Sustainability Planning and Higher Level Plans. This work is supported by MELP regional staff, Arrow Forest District staff, and Atco Lumber. It also will support the "Columbia Basin Mapping and

Habitat Evaluation" project being conducted by BC Ministry of Forests and Washington State Fish and Wildlife.

Consequence of Not Funding:

Fish distribution and knowledge of habitat characteristics are integral to sound decision making in the Timber Supply Review and assessment of Forest Development Plans, and land management with the Province. Without such knowledge, many non-fish bearing streams are defaulted to fish bearing, leading to increased costs in some areas. Knowledge of sensitive areas and fish values are a necessary component for sustainable forest management and certification.

Timing Constraints:

This project will proceed much more quickly if the products from the Fisheries Data Conversion and TWA are available.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$80 000	$15 000	$200 000	$150 000	$100 000	$450 000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:

Project Name: ***Environmental assessments for salvage program***

Originators:

Name(s): Mike Fenger. Richard Thompson
Organization: Habitat Branch, Ministry of Environment, Lands and Parks
Telephone & Fax: (250) 387-9779; (250) 356-5104
E-mail Address: Mike.Fenger@gems3.gov.bc.ca

Project Summary

The purpose of this project is to complete environmental assessments for environmental values such as forest dependent species at risk in British Columbia in light of an expanding salvage program. These assessments are needed to evaluate the effects of current and proposed salvage practices on a range ecosystem indicators for biodiversity and determine if current practices pose a significant increase in risk to environmental values, such as species at risk. A report will be generated that addresses the adequacy of current salvage measures for sustaining biodiversity and selected species at risk that depend on habitats that are currently being targeted for salvage.

This project contributes important new information to support sustainable forestry initiatives and will lead to improvements in the salvage program. This project will support strategic objectives of Forest Renewal and its partners and will ensure that salvage is carried out in a manner that sustains the rich biological legacy in British Columbia. The proposal does so by providing information on risk to environmental indicator and mitigate actions to reduce this risks if increase the risk to species already at risk.

Status

New.

Project Details:

Background

Currently there is a growing number of salvage operators being licensed. The environmental impacts of these operators and the source of the salvage material in terms of ecological functions has not been addressed prior to awarding or renewing tenures. Without some information on the impact of these operations in the short and longer –term the government faces two liabilities; 1) is a liability that puts more species at risk with the potential to force future restoration investments if species are to remain in forest after harvesting and salvage. 2) the expectation of salvage operators is that they have been awarded a right and they may expect some form of compensation from government if there is a change in rights linked to improved environmental knowledge. This problem analysis is expected to lead to a more prudent expansion of the salvage program one that addresses the public liability for both species at risk and salvage operator tenures. Prior to further increases in salvage operations the cumulative impacts of these operations needs to be understood and the environmental impacts and implications clarified.

Objectives

The objective of this project is to undertake an environmental assessment using a number of environmental indicators in order to determine the environmental sustainability of current salvage practices British Columbia. The problem analysis will need to include a number of recommendations in areas where there are significant risk with specific direction on how to mitigate risk through changes salvage practices. The problem analysis will be undertaken using both a workshop environment to achieve agreement on the appropriate methods and to select indicators and the data sources. The amount of field work and review salvaged areas will be determined after the workshop on the method. There will be an office exercise to review salvage practices in a number of forest districts. The work will be done in a consultative manner.

Scope (local, regional or provincial): Provincial
Clients: Interested public, industry, government, NGOs

Decision/Ministry objectives supported

Government objectives regarding sustainability and accountability for the environmental values are demonstrated.

Outputs to date if continuing: NA

Deliverables:

4. Problem analysis and recommendations	Year 1	June 2001
5. Policy/guidelines development and training of salvage operators.	Year 1 and 2	June 2002
6. Monitoring the effectiveness of environmental guidelines for sustaining biodiversity in salvage.	Year 2 and 3	June 2004

Partners/Linkages:

Ministry of Forests

Consequence of Not Funding:

Without an assessment the environmental sustainability of the salvage program and without any measures to improve this program, the ability of this program to sustain environmental values remains unknown. The onus of proof of sustainability rests with those proposing the taking of resources. Salvage decisions will continue to be made in ignorance of environmental impacts. Without addressing the environmental sustainability there is potential for salvage operations to face marketing difficulties.

Timing Constraints:

Past Investment and Proposed FRBC Budget:

FRBC has invested founds in salvage operators and Ministry of Forest has invested significant efforts in expanding this program.

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
		40 000	50 000	50,000	140 000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Information Analysis/Modelling Toolkit

Originators:

Name(s): Bruce Pendergast Organisation: MELP RIB
Telephone & Fax: 387-9770 fax 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca
Alternate: Dave Clark/387-9785/ Dave.Clark@gems2.gov.bc.ca

Project Summary

The project will provide widely applicable models and analysis methods that can be applied to FRBC funded inventory information, in particular, Predictive Ecosystem Mapping, Terrestrial Ecosystem Mapping, and Wildlife Habitat Mapping. Products will include wildlife habitat supply analysis, rare ecosystem potential and watershed values and sensitivities. These products will provide clients with better information in order to provide better ecological and wildlife habitat knowledge for strategic planning activities, such as the TSR process.

Status

New

Project Details:

Background: Ecosystem mapping and wildlife habitat mapping is available for about a quarter of the province. Much of the interpretative potential of this information is not being applied to planning activities due to the lack of analysis and modelling tools that can be used to determine ecosystem and wildlife habitat values and to assess various land use activities. This information is not presently being funded within the ministry.
Objectives: The objective is to create models and interpretations that can be used on standardized ecosystem and wildlife habitat mapping products, throughout the province. This project will provide analysis methods to use Predictive Ecosystem Mapping, Terrestrial Ecosystem Mapping, and Wildlife Habitat Mapping to support planning, by ensuring ecological and wildlife habitat values are interpreted and understood.
Scope (local, regional or provincial): the models and analysis tools created will have the potential to be applied for many areas throughout the province.
Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, Non-Government Organizations and First Nations.

Decision/Ministry objectives supported: These tools will help assess natural diversity values, such as habitat for a wide range of wildlife species, including rare and endangered species and allow for inclusion of this information in strategic planning activities and for decisions relating to sustainable timber supply under TSRs.
Outputs to date if continuing: n/a

Deliverables:

1. A problem analysis to determine highest priority analysis tools, in conjunction with industrial and ministry clients. Need to indicate exactly what tools and indicator-based information needs to be created support target decision processes (e.g. TSR, other regional planning initiatives). An overview framework will be developed, to link generic inventory components: tools, indicators, baseline data, information, decision processes, etc. for communication. This will be completed by March 2002.
2. Priority tools will be created on pilot projects, with documentation, that produce information for key decision process indicators. These will be made available to clients by March 2003, with revisions, as requested by clients by December, 2003. Indicators are expected to include the following:

Habitat supply indicators that determine supply for biodiversity or particular species, or rare ecosystems
Rare ecosystem occurrence
Representation of site series
High importance habitat areas for high capability land for multiple species of wildlife

Ungulate winter range potential

Land sensitivities (e.g. erosion potential, high watershed values, hydrological regimes).

Partners/Linkages:

Industrial and ministry clients will be contacted in order to determine their needs, and will have access to these common tools as they are developed both for their use and to help improve their utility.

Consequence of Not Funding: Present ecosystem and wildlife habitat inventories that have been funded by FRBC through the Resources Inventory Program over the past 6 years are being underutilized in strategic planning activities, due to the lack of tools to analyse this data. This poor use of over $30 million of FRBC funded data will continue without these tools that will allow application of this information to land use planning at the strategic level.

Timing Constraints:

Target is to meet proposed timetable for TSR 3 spatial integration of non-timber values, and to meet the on-going needs of other strategic processes.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	

		$140,000	$130,000	$30,000	$300,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Spatial tools and modeling for TSR

Originators:

Name(s): Chris Fletcher Organization: Timber Supply Branch
Dave Waddell
Peter Fuglem
Telephone & Fax: (250) 356-5947 E-mail Address: Chris.Fletcher@gems8.gov.bc.ca

Project Summary

Forest and resource management is critically dependent on spatial resource distribution and constraint relationships. Modeling of these management issues, including the supply of timber, is rapidly evolving with more and more sophisticated spatial and non-spatial information. This project has been developed to document recent model developments, test and validate issues associated with these modeling approaches, and look at tools which will assist resource managers in better using the information. Additionally, data quality issues must be investigated, and impacts of data uncertainty tested.

This project works to the key *Strengthening Sustainable Forest Management Strategic Objective:* investing in the development of relevant, useable, timely information and tools keyed to achieving sustainable forest management. It fits within the *Sustainable Resource Benefits Componet* and fulfills the key purpose: Review and validate forest-level tools to model the effects of forestry management actions which both maximize socioeconomic resource benefits for multiple values and meet standards for sustainability. It meets the two targets:

- review, consolidate and adapt forestry management modeling tools that predict benefits and impacts for all major forest resources
- verify modeling results

Status

New

Project Details:

Background

Timber supply and resource modeling has become a critical component of resource management, especially forestry. Sustainable management requires the ability to look many decades into the future to estimate the long-term impact of management strategies.

Objectives

This project endeavors to move towards greater inclusion of spatial data in the process of modeling. Many modelers in resource management and related disciplines have been experimenting with "spatially-explicit modeling" as a potentially more accurate method of analyzing resource management strategies. The inherent problems and advantages of this approach must be assessed and appropriate steps taken in implementing these types of models. As well, there are other spatial tools that should also be evaluated for resource management.

Scope (local, regional or provincial)

The results will have impact on TSR at the TSA level. However, the overall impacts are provincial in scope and will impact TFLs as well.

Clients

The main clients for this work are the timber supply and resource management specialists in both government and industry.

Decision/Ministry objectives supported

Timber Supply Review process.

Deliverables:

1. Documentation of spatial timber supply models (existing and under development) (September 2001)
2. Documentation of spatial tools for resource/timber management (December 2001)
3. Inventory validation study (October 2001)
4. Prototyping of several key features for FSSIM (December 2001 to March 2003)
    - Spatial mapping techniques for display of the timber harvesting land base
    - Spatial mapping techniques for display of FSSIM spatial harvest
    - Development of spatial algorithms for blocking and patch distribution within FSSIM
    - Development of economic feasibility assessment within FSSIM
    - Development of road network assessment capabilities within FSSIM
    - Development of habitat supply modelling capabilities within FSSIM

Partners/Linkages:

There will necessarily be linkages to other agencies and companies involved in various levels of spatial modeling.

Consequence of Not Funding:

There are many approaches to spatial modeling of resource management. Due to the complexity of the modeling, its components and the input data, the results achieved are difficult to assess. Without this project, the modeling currently underway is not likely to be accepted as part of the TSR process.

Timing Constraints:

TSR 3 (the third round of analysis) is about to begin. This project is very timely in provide the necessary direction for the Ministry, Forest Industry and consultants in spatial analysis capabilities and limitations.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$120,000	$150,000	$50,000	$320,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

STRENGTHENING SUSTAINABLE FOREST MANAGEMENT

Project #:

Project Name: Development of Guidelines and Standards for Managing Biodiversity Values in Large Blocks

Originators: Colene Wood, MELP Habitat Branch, 250-356-5538, CWood@Victoria1.gov.bc.ca, on behalf of regional specialists.

Project Summary

In response to legislated objectives in higher level plans and direction from strategic land use plans, guidelines and standards for designing and managing structure and diversity in large blocks will be developed and tested using adaptive management studies.

A long term view of spatial and temporal biodiversity elements is particularly important for managing large blocks. However, progressive cutting can also lead to the landscape level disturbance that a single large block creates. This project will compare the two situations, and develop corresponding guidelines that maintain biodiversity across the landscape.

Status

New project concept that builds on existing work in biodiversity and forest management. Information has been collected and analyzed in the Prince George Region that may apply to other regions. Guidelines are developed based on the amount of desired retention and features, related to historical NDT aspects and shape complexity of fires.

This project links to projects in the Arrow IFPA, and several proposed projects in the FRBC research program.

Project Details:

Background: The *Forest Practices Code of BC Act* enables some harvesting of blocks larger than the maximum sizes. Specific strategic land use plans, such as the Kootenay/Boundary Land Use Plan, also provide for this exception when the maintenance of structural characteristics is the primary objective. There is a lack of knowledge of how to design a silviculture regime that provides biodiversity and habitat values in large blocks. Large block harvesting can be designed to avoid some of the fragmentation and other negative consequences of smaller sized patch harvesting. Specifically, operational knowledge is needed related to the kind of structures that should be retained, patterns of retention, the silviculture treatments that could enhance forest structure and function, necessary monitoring regimes, and other aspects of managing forests for biodiversity.

In the absence of this knowledge, licensees and the Ministry of Forests may be prepared to initiate harvesting large cutblocks without substantial technical and biological justification. The primary concern is that practices over large areas of the landscape have widespread affects on biodiversity. If improper practices are implemented, with corresponding negative effects on biodiversity, there will be few opportunities to mitigate the effects.

The implications of practicing forestry in this manner have several potential negative impacts: 1) public perception may be adversely affected, which may result in delays in approving operational plans; 2) global markets may be affected by the aforementioned public perception; and 3) trends set with little scientific basis will be difficult to alter once information becomes available, further exacerbating poor forestry practices.

Objectives: Develop and recommend guidelines and standards, with supporting adaptive management designed studies, for harvesting and treating large blocks (i.e., blocks larger than the maximum sizes specified under the *Forest Practices Code of BC Act*). (Note: this issue is Goal #1 under Research – Biodiversity, however, there are pressures to initiate harvesting of large blocks in the absence of research results). A secondary objective is to contribute to the identification of criteria and indicators of sustainable forest management in BC.
Scope: Regional and provincial; possible global implications for forest products markets.
Clients: Licensees and ministries planners and managers.
Decision/Ministry objectives supported: TSR analyses; forest development planning; biodiversity strategy.
Outputs to date if continuing: n/a

Deliverables: 2001/2002: Literature search summary; recommendations for guidelines and standards, with corresponding design of silvicultural systems for southern interior forests (incorporating and adding to existing work from C. DeLong, PG Region); adaptive management plan design and overall study for highest priority selected BEC zones in Nelson Region and PG Region; links established to existing projects and related funding sources for implementation of adaptive management plan.

2002/03: Adaptive management design and overall study for remaining selected BEC zones in the interior; links established to existing projects and related funding sources for implementation of adaptive management plan. Compare regular patch distribution to proposed large cutblock design, and design corresponding monitoring for Nelson and PG Regions. Specific standards applied in southern and northern interior forests and effectiveness monitoring plan developed for forest practices.

2003/04: Recommendations for guidelines and standards, with corresponding design of silvicultural systems in selected areas of coastal BC. Adaptive management design and overall study for selected BEC zones in remaining high priority BEC zones in BC.

Specific standards applied in remainder of the province and monitoring plan for trial establishment.

It is expected that related research and other projects (FRBC and non-FRBC funded) will be used to implement trials on an operational basis. This project provides the technical and scientific basis for managing large cutblocks, and the design for adaptive management.

Partners/Linkages:

MELP fully supportive; MoF, John Pollack, Tom Braumandl, Nelson Region; MoF, Craig DeLong, PG Region; IFPA/EFMPP MYA holders (including Fred Bunnell), other licensees. Linkages to FRBC research program.

Consequence of Not Funding: Many opportunities for meeting habitat supply/biodiversity objectives along with timber supply objectives could be lost. There could be negative consequences for licensees who are seeking certification. A corresponding negative effect on timber supply is to be expected if licensees are not permitted to harvest (or are severely delayed in being permitted to harvest) large blocks in the absence of knowledge of the consequences to habitat/biodiversity. (Also see "Background" above).

Timing Constraints: Immediate need for information as strategic land use plans and higher level plan objectives are being implemented, and forest development plans are identifying potential blocks. Ongoing projects need linkages developed as soon as possible.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
?	?	25,000	50,000	50,000	125,000

Access to Information Component

Vision

The vision for this component is:

> *To both simplify and improve access to forest resource information, including a common web-based infrastructure and tools to access digital data, thereby assisting decision-makers in strategic planning processes and the public in planning for and understanding the sustainability of BC's forests.*

This component supports Forest Renewal BC's Strengthening Sustainable Forest Management strategic objective by providing tools to simplify access to information important for sustainability analyses, and therefore the quality of decision-making.

This component satisfies all of the eligibility criteria, performance targets and linkage requirements as follows:

1. This component will:
   - Develop tools to catalogue available information
   - Use these tools to catalogue available information
   - Implement a standing partnership group with industrial partners and external clients to facilitate development and management of common access protocols and tools
   - Provide public access to SFM information in appropriate formats through a common web interface

2. This component complements and facilitates regional investments by making available information resulting from Forest Renewal and other investments.

3. This component is incremental to the ministries existing programs by virtue of the broad base of clients and partners being served and the addition of extensive data holdings.

4. Time-bound deliverables and performance measures are defined in the attached list of projects.

5. The planning process for this component, under BC Fisheries leadership, involves a peer group comprised of the Land Information and Inventory Co-ordination Committee (LIICC) and the TFL/MoF Inventory Co-ordination Committee.

6. In addition to the standard partnership between Forest Renewal BC, MoF, MELP, BC Fisheries, and regional SSFM planning groups, this component will be implemented through a standing partnership group with industrial partners and external clients.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Accelerated Access to Fisheries Information: Standard Reports and Tools for Analysis and Query

Originators:

Name(s): R.S. Hawthorn
Organization: BC Fisheries
Telephone & Fax: 387-9593, 356-1202
E-mail Address:Stu.Hawthorn@gems3.gov.bc.ca

Project Summary

This project will provide users with accelerated access to information contained in the Fisheries Data Warehouse by:

- developing additional query and analysis tools focussed on indicators of fish sustainability, aquatic and riparian classification for productivity and biodiversity and other themes relevant to land use plan implementation and Timber Supply Review; and
- designing standard reports, including maps, and making them available via the internet/intranet.

Two main groups of users have been identified:

1. *General public* – Version 1 of the FishWizard internet application went public on the Internet in May 2000 and addressed priority themes for freshwater anglers and general use (fish stocking, fish distribution, lake depth maps, basic stream and lake reports, etc). Searches can be defined geographically by waterbody name or area and information requested for the area of interest. The main difference between this and previous web-access applications is that spatial data (maps) are provided and spatial-based queries are possible. This proposed project will extend public access to include themes related to sustainability.
2. *Staff/professional* - No application has been developed that specifically targets staff and professional users. This project will build an intranet application for indicators of sustainability and related themes on the FishWizard structure but with significantly enhanced query and analysis capabilities and access to non-public as well as public data.

Status

This is a continuing project. The initial production version of the FishWizard was revised in November 2000 using updated software (ArcIMS), testing and monitoring will occur during the winter of 2000/01. This will add increased functionality and will enable

BC Fisheries to make use of additional data in the Fisheries Data Warehouse. In addition, Fisheries and Oceans Canada (FOC) data contained in the Canada/BC Fisheries Data Warehouse (shared with DFO) will be added to provincial datasets for use in development of new themes. The new ArcIMS software will provide generic functionality that can be used to build sophisticated data access and analysis tools.

Project Details:

Background – historically, access to fisheries data has been difficult for staff (and practically impossible for the general public). The FishWizard provides simple access but has no analytical and only simple reporting capabilities It is also based on technology that predates the probable common standard that both MELP and MOF (and FOC) are moving toward.

Objectives – The proposed applications will focus on indicators of fish sustainability, aquatic and riparian classification for productivity and biodiversity and other themes relevant to land use plan implementation and Timber Supply Review. They will take advantage of the existing FishWizard application plus the capabilities of ArcIMS and provide a simple method of public access to the most commonly requested information about fish and sustainability plus a suite of tools for query and analysis for staff and professional users. The map-based query approach simplifies the means by which users define their area of interest.

Scope – province-wide; multi-agency

Clients - MELP/BCF biologists, habitat staff and forest ecosystem specialists; Ministry of Forests for planning and timber supply analysis; forest and forest-related industries; Fisheries and Oceans Canada; First Nations; environmental organizations; certification agencies; contractors; community groups; and the general public.

Decision/Ministry objectives supported – FRBC funding will accelerate:

- access to tools and data to address fisheries components of land use plan implementation
- ability to generate the riparian/aquatic information that is most valuable for Timber Supply Review
- automated ability to classify, calculate and map indicators of fish sustainability in forest environments
- access to information by partners, forest licensees, other stakeholders and the public

Outputs to date –

- FishWizard, a simple map-based GUI interface for accessing priority fisheries data themes
- ability to print standard stream and lake reports and variety of maps.

Deliverables:

1. Tools for automated classification, calculation and mapping of indicators of fish sustainability.
2. Tools for analysis and synthesis of data for use in land use plan implementation and Timber Supply Review.
3. Standard reports and maps for the public, accessible over the Internet, for themes focussed on the state of fish and fish habitat on the forest land base.

Partners/Linkages:

BC Fisheries – provides 1.0 salaried FTEs for project supervision and internal product development plus $115K in operational funding in FY01-02

MELP – tools to be developed will be primarily used by MELP regional biologists and technicians

DFO – the FishWizard is a federal/provincial information sharing initiative under the Canada-BC Agreement on the Management of Pacific Salmon Fishery Issues

Consequence of Not Funding:

The project provides the ability to analyze and report on the $95 million of fish and fish habitat inventory data collected during the past 10 years, largely with FRBC funding. Public access to a subset of the information will continue via the FishWizard but staff will not have the query and analysis products needed to assess fish and fish habitat sustainability in forested environments.

Timing Constraints:

This project can run parallel to data capture and conversion and data registry completion. Together, the three projects form a package to make all fisheries data available in a form that can be used for strategic plans and strategic decision.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$160K	$55K	$68K	$36K	$36K	$140K

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Capture and Conversion of Fish and Fish Habitat Data for the Forest Land Base

Originators:

Name(s): Angelo Facchin
Organization: BC Fisheries
Telephone & Fax: 953-4982, 356-1202
E-mail Address:
Angelo.Facchin@gems6.gov.bc.ca

Project Summary

Over the past 10 years, over $95 million – with FRBC being the largest funding source - has been spent on the collection of new fish and fish habitat data for the forest land base and on the conversion of legacy hardcopy and digital data to the new RIC-standard formats. Data capture tools and provincial databases have been built to capture and store the data. Web-enabled applications provide limited access to the databases.

The databases include summary level - Fisheries Information Summary System (FISS); field-level - Field Data Information System (FDIS), BC Lakes; converted legacy – Fish Habitat Inventory Initiative Program (FHIIP), bathymetric maps (BATH), RAB stream cards; aquatic base map – 1:50K Watershed Atlas (WSA), 1:20K TRIM Watershed Atlas (TWA), Watershed Dictionary; and the Fisheries Data Warehouse (FDW).

Primarily because of limited capacity, changing standards and lack of a functioning 1:20K TRIM Watershed Atlas, much of the FRBC-funded field data collected during the past 5 years and some of the legacy data remain to be converted and loaded into new provincial Oracle database management systems. This is now most cost-effectively done in headquarters. This project will accelerate the capture of both existing and new data for use in defining environmental baselines for fish and fish habitat and for products that support land use plan implementation and timber supply review.

Status

This project is a continuation of some uncompleted parts of the former FRBC Inventory Framework program, including the Fisheries Information Summary System, Fisheries Data Conversion and Fisheries Database Development projects.

Databases have been built and the bulk of historical fish and fish habitat data (pre-1995) has been converted to standard electronic formats. Data entry and loading have been completed for approximately 80 per cent of the existing records compiled for input to the Fisheries Information Summary System (FISS). Most pre-RIC standard FRBC field inventory projects from 1995-97 have been captured as have just over 15% of the 1997-99 RIC-standard field projects.

Good communications have been established between BC Fisheries data management staff and biological contractors collecting reconnaissance-level fish and fish habitat data. Several of these contractors have provided input into the design of data entry tools and the recently enhanced BC Fisheries Inventory Web sub-site for professional/technical users.

Project Details:

Background - The federal/provincial FISS database is in place and data is being entered into it. The FDIS database – which holds the FRBC reconnaissance fish and fish habitat field data - is in place and data is being loaded into it. The Watershed Dictionary, BC Lakes, RAB Stream Cards, FHIIP Stream Cards and Bathymetric Map databases are in place and existing data has been loaded. Existing Web applications permit access to a subset of the data from all datasets except FDIS. Web access to a limited subset of FDIS will be available soon.

A single-user limited-functionality Scientific Collection Permit System (SCP) has also been built and is being used in two MELP regions to capture limited information about fish distributions, including data from forest licensees that has been collected to meet provisions of the Forest Practices Code. This data has not been entered into the provincial database management systems.

Objectives – To accelerate access to fish and fish habitat data for sharing and integration by:

- continuing entry of summary-level attribute and spatial data into FISS;
- continuing to load attribute data for FRBC-funded projects into FDIS;
- modifying existing database systems to provide data in a convenient and suitable form for use in calculating indicators of sustainability;
- modifying the Fisheries Data Warehouse to provide seamless access to fish and fish habitat data collected using a variety of standards over the years for ease of use by users and Web developers;
- providing better coordination of attribute and GIS data through a "new" waterbody identifier; the Fisheries GIS datasets will be retrofitted with an unique ID that already exists in the Fisheries Oracle database;
- developing an application that allows direct submission of Scientific Collection Permit required data over the Web and by capturing existing SCP data; and
- converting steelhead stock data stored in a VAX database to an Oracle dataset integrated into the Fisheries Data Warehouse.

Scope – Province-wide datasets and provincial access

Clients - MELP/BCF biologists, habitat staff and forest ecosystem specialists; Ministry of Forests for planning and timber supply analysis; forest and forest-related industries; Fisheries and Oceans Canada; First Nations; environmental organizations; certification agencies; contractors; community groups; and the general public.

Decision/Ministry objectives supported -

- input to fisheries components of land use plan implementation
- improvement to the riparian/aquatic information available for Timber Supply Review
- increase in usable information for calculation of indicators of sustainability
- access to information by partners, forest licensees, other stakeholders and the public

Outputs to date -

- data capture for 31,500 waterbodies, including 65,055 fish observations on 14,945 waterbodies in FISS
- 10,423 sample sites from just over 100 projects in FHIIP (from pre-RIC standard 1995-97 FRBC-funded projects)
- 3,278 stream sample sites, 2,011 fish sample sites and 123 sampled lakes in FDIS from nearly 40 projects (from 1997-99 RIC-standard FRBC-funded projects)

Deliverables:

1. Data for 6,000 new waterbodies plus new data for existing waterbodies compiled and entered into FISS from 2500 reports over 2 years.
2. Data captured and loaded into FDIS for 245 FRBC-funded reconnaissance fish and fish habitat inventory projects (20-25,000 field sites).
3. FDIS and FISS database management systems altered to incorporate changes in data collection standards.
4. Modifications to the Fisheries Data Warehouse to allow seamless access to fish and fish habitat data collected to different standards.
5. Implementation of a system to allow more reliable and faster linking of attribute and spatial data
6. Completion of an Internet-based Scientific Collection Permit data capture system.
7. Addition of existing fish species data into the Oracle Fisheries Data Warehouse.

Partners/Linkages:

BC Fisheries – provides 6.5 salaried FTEs plus operational funding for ongoing database management and systems support

MELP – the complete and current Fisheries Data Warehouse is available in the MELP Master Warehouse and MELP regional warehouses

DFO – a subset of the Fisheries Data Warehouse is regularly sent to DFO Canada/BC Warehouse; DFO has provided over $500K in co-funding for these initiatives.

Consequence of Not Funding:

Fish and fish habitat data valued in excess of $50 million, most collected in projects funded by FRBC, will not be available for effective use in the strategic-level integrated sustainable forest management initiatives that are FRBC's current priority.

Timing Constraints:

The level of investment will directly impact the rate of progress. These datasets are essential for fisheries inputs to land use plan implementation, Timber Supply Review and development of baseline data for indicators of sustainability. Inability to access significant parts of the FRBC-funded fish and fish habitat data set will seriously reduce the cost-benefit effectiveness of FRBC's investments to this point in time.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
3,795,000	1,030,000	310,000	325,000	315,000	950,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Fisheries Data Registry Completion

Originators:

Name(s): Angelo Facchin
Organization: BC Fisheries
Telephone & Fax: 953-4982, 356-1202
E-mail Address: Angelo.Facchin@gems6.gov.bc.ca

Project Summary

New and expanded database systems, many of them joint federal/provincial, have been under development at BC Fisheries for the past 10 years. These include summary level - Fisheries Information Summary System (FISS) - field-level - Field Data Information System (FDIS), BC Lakes - converted legacy – Fish Habitat Inventory Initiative Program (FHIIP), bathymetric maps (BATH), RAB Stream Cards – and aquatic base – 1:50K Watershed Atlas (WSA), 1:20K TRIM Watershed Atlas (TWA).

Current data descriptions (metadata) for these systems are only partly sufficient for use by professionals. In the absence of direct consultation with the database managers, they are insufficient for use by individuals who are not already familiar with the limitations of each data set. Furthermore, formal data quality assurance has been carried out only on data in FDIS. The summary level FISS information, in particular, requires a minimum level of quality assurance before additional products are released to the public.

This project will improve fish and fish habitat metadata to a minimum level acceptable for use in products that support strategic applications including development of indicators of sustainability and for general access by stakeholders and the public.

Status

Data documentation in fish and fish habitat databases is highly variable and exists mostly at the data set rather than the record level. FISS, currently containing about 65,000 fish records, contains a field that indicates the quality of the data and records have been flagged for some species sightings significantly outside of the known range. The BC Lakes database, with data for over 3,500 lakes, has a quality field for fish observations but only a few records have been labeled. The Field Data Information System (FDIS) will contain all FRBC-funded (total investment ~$80 million) fish and fish habitat inventory data and is quality assured under the supervision of MELP regional fisheries inventory specialists before being loaded into a central database. However, there currently is no record level quality indicator in FDIS. All Oracle databases are documented in Oracle CASE but that documentation has not been entered into the publicly available MELP Data Registry.

Project Details:

Background - A large quantity of fish species data exists in BC Fisheries fish and fish habitat databases but very little of it is quality labeled. Databases have been built and documented in Oracle CASE. However, the field descriptions are incomplete and CASE documentation is not accessible to users. Metadata for fish and fish habitat data needs to be reviewed, updated and made accessible to users.

Objectives -To provide adequate fish and fish habitat data quality information by:

- developing procedures to identify outliers in data sets, investigate them and flag questionable values;
- quality labeling fish observation records and other data of interest in FISS, BC Lakes, FDIS, FHIIP and Resource Analysis Branch Stream Cards data sets;
- updating CASE repositories for all fish and fish habitat Oracle systems; and
- recording fish and fish habitat databases in the MELP Data Registry and updating static documents (HTML and paper).

Scope - Province-wide datasets

Clients - MELP/BCF biologists, habitat staff and forest ecosystem specialists; Ministry of Forests for planning and timber supply analysis; forest and forest-related industries; Fisheries and Oceans Canada; First Nations; environmental organizations; certification agencies; contractors; community groups; and the general public.

Decision/Ministry objectives supported -

- input to fisheries components of land use plan implementation
- improvement to the riparian/aquatic information available for Timber Supply Review
- increase in usable information for calculation of indicators of sustainability
- access to information by partners, forest licensees, other stakeholders and the public

Outputs to date – developed, implemented and populated database systems including:

- Fisheries Information Summary System (FISS)
- Field Data Information System (FDIS)
- Watershed Dictionary (WDIC)
- BC Lakes
- Fish Habitat Inventory Initiative Program (FHIIP)
- Bathymetric Maps (BATH)
- RAB Stream Cards
- Watershed Atlas (WSA)
- TRIM Watershed Atlas (TWA)

Deliverables:

1. Updated and improved procedures for quality labeling in fish and fish habitat databases
2. Completion of quality labeling for fish species and related observations in over 80,000 records in FISS, FDIS, BC Lakes, FHIIP, RAB Stream Card databases
3. Updated CASE Repository
4. Updated MELP Data Registry

Partners/Linkages:

BC Fisheries – provides 1.5 salaried FTEs

MELP – the complete and current Fisheries Data Warehouse is available in the MELP Master Warehouse and MELP regional warehouses

DFO – a subset of the Fisheries Data Warehouse is regularly sent to DFO Canada/BC Warehouse

Consequence of Not Funding:

Fish and fish habitat data used by government for planning and management will be subject to criticism by stakeholders and the public that will be difficult to refute. In the absence of quality labeling, the precautionary approach would mean that good data may not be used where it could contribute to improvement of information products developed by government and others.

Timing Constraints:

Projects are starting now that will integrate environmental data from many sources into a single repository exposing fish and fish habitat data to new users that are unfamiliar with the data and will require more complete metadata.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
389,000	257,900	80,000	95000	70,000	245,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: Fisheries Project Registry Data Capture

Originators:

Name(s): R.S. Hawthorn Organization: BC Fisheries
Telephone & Fax: 387-9593, 356-1202 E-mail
Address:Stu.Hawthorn@gems3.gov.bc.ca

Project Summary

The Fisheries Project Registry (FPR) is a federal/provincial map-enabled database management system, accessible via the internet, which tracks minimum data about the existence, general nature, location and key contacts for specific categories of fisheries-related projects including inventory, assessment, research, restoration and enhancement, and economic development.

The Registry provides those wishing to do analyses or studies on a waterbody or watershed with sufficient information to locate the detailed data required for the analyses, to identify data gaps and to assess whether additional studies are required. It enables each funding source (e.g. FRBC) to query and locate projects to which they have contributed funding and to retrieve summary information and maps.

The proposed project will enable development of an enhanced suite of queries and reports, complete capture of past projects and enable capture of new FRBC projects including SSFM fisheries-related and all Watershed Restoration projects.

Status

This is a continuing project. To this point in time, 2900 projects have been entered into the Oracle database and can be queried (public access) and located on a map via the internet. Of these, over 1020 were FRBC-funded, including all Watershed Restoration (both upslope and in-stream) and all Resources Inventory Program fish and fish habitat. Capture of non-FRBC projects was funded by BC Fisheries and Fisheries and Oceans Canada.

Project Details:

Background – prior to the development of the FPR no single source existed which summarized all fish and fish habitat-related project activities in a given waterbody or watershed. The FPR consists of two modules – data entry and query. The entry module is accessible only with assigned add/edit privileges but the query (view) is available to all, including the general public. Both modules are in the process of being rebuilt using improved-technology (ArcIMS).

Objectives – to accelerate the input of data and to develop additional tools for querying the information. A backlog of projects, from a variety of funding sources and agencies still exists and requires capture in order to provide a complete view of activities undertaken in each watershed. In addition, FRBC projects that start in Fiscal 00-01 or 01-02 will need to be identified and captured.

Scope – province-wide; multi-agency

Clients – Forest Renewal BC; Fisheries Renewal BC; Habitat Conservation Trust Fund; FOC Habitat Restoration and Salmon Enhancement Program; BC Hydro; Urban Salmon Habitat Program; biologists and other staff in all levels of government, industry, and consulting companies; forest and forest-related industries; Fisheries and Oceans Canada; First Nations; environmental organizations; certification agencies; contractors; community groups; and the general public.

Decision/Ministry objectives supported – reduces duplication of inventory effort; ensures efficient use of resources; and provides means of locating sources of the detailed data.

Outputs to date – over 2900 projects (each with one or more activities – over 4000 to date) entered into Oracle database. Each activity is geo-referenced and can be plotted on the digital Watershed Atlas base map. Information can be queried and mapped in many different ways over the internet – by location, by sponsoring agency, by project type, etc.

Deliverables:

4. Expanded suite of queries and reports.
5. Elimination of data capture backlog.
6. Capture of all new FRBC-funded fish-related projects, including upslope and instream Watershed Restoration projects.

Partners/Linkages:

DFO – manages the Fisheries Project Registry database as a federal/provincial information sharing initiative under the Canada-BC Agreement on the Management of Pacific Salmon Fishery Issues

BC Fisheries – supervises and funds non-FRBC/non-federal data capture

Fisheries Renewal BC – funded development of the system (with FOC) and provides project data

Consequence of Not Funding:

The summary of activities within a given waterbody or watershed would remain incomplete and the dataset would quickly become obsolete. This would lead to increased duplication of effort and analyses would be based on incomplete information.

Timing Constraints:

Rates of data capture should match those of new project initiation in order to maintain an up-to-date dataset.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$70K	$375K	$45K	$35K	$30K	$110K

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: FRIC Operational Funding

Originators:

Name(s):	Fern Schultz	Organization:	MELP
Telephone:	387-3739	E-mail Address:	
	Fern.Schultz@gems5.gov.bc.ca		

Project Summary

The Forest Resources Inventory Council is established under the authority of the Chief Forester of the Ministry of Forests of British Columbia and the Assistant Deputy Minister (ADM), Environment and Lands Headquarters Division from the Ministry of Environment, Lands & Parks (MELP) to provide advice and recommendations concerning inventories of the land and resources in the Province.

Province. Status

The Forest Resources Inventory Council is on-going.

Project Details:

Background

In response to the Forest Resource Commission's recommendations, the Resources Inventory Committee was formed. This multi - agency, multi-sector cooperative program is revising and creating, where necessary, standards and methodologies for British Columbia's resources inventories.

With the recognition that inventories are a vital element in land use planning, allocation and management, government agencies have increased their budget allocations, the private sector has responded with additional resources, and non-government organizations have organized and are undertaking inventories on land areas of particular interest such as streams and wetlands. Recently, Forest Renewal BC has become a significant partner in providing funding for resources inventory acquisition.

Objectives

Within the context of approved provincial or regional land use goals, plans or designations as well as the Chief Foresters' determinations of Allowable Annual Cut, and the requirements of the Forest Practices Code, the Forest Resources Inventory Council will meet its vision by:

- assessing the state of existing resource inventories as expressed in currently available data sets;
- assessing the state of the existing base maps;
- developing strategies and identifying the priorities for the acquisition of forest resources inventory data and base maps;

- ensuring that the business priorities of provincial programs, regional initiatives, corporate partners and other stakeholders are defined and addressed to the limits of the resources available;
- developing, evaluating and recommending forest resource data management systems that can manage the data sets acquired to the benefit of all participants; and,
- reporting periodically, and at least annually, to the Chief Forester on the state of resource inventories and other pertinent issues as required.

Scope (local, regional or provincial)

- provincial

Clients

- Forest Renewal, industry, academia and government.

Decision/Ministry objectives supported

- Land and resource use planning, TSR, resource management

Outputs to date if continuing

- Draft strategy and framework (October, 2000)

Deliverables:

The Council shall, at a minimum, present an annual report to the Chief Forester and the ADM of MELP on the state of inventories in British Columbia. This report will contain, but not be limited to, the Council's findings and recommendations regarding:

1. inventory accomplishments or highlights of the past year;
2. status and adequacy of current inventory knowledge and base maps;
3. concerns of Council with respect to adequacy, cost-effectiveness, efficacy, and standards of inventories;
4. inventory needs and priorities for the coming year.

Partners/Linkages:

Composed of representatives of industry, academia and government, the Forest Resources Inventory Council recommends forest resources inventory program needs and priorities in collaboration with council members, their constituents, Forest Renewal BC, and the Land Information and Inventory Coordinating Committee (LIICC) and the Resources Inventory Committee (RIC).

Consequence of Not Funding:

Funding the operations of the Forest Resources Inventory Council provides an independent determination of the inventory needs of the province for both public and private partners.

Timing Constraints:

none

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
70 000		80 000	80 000	80 000	240 000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:
(FRBC will
assign)

Project Name: Government Corporate Baseline Registry

Originators:

Name(s): Evert Kenk Organization: Land Use
Coordination Office
Telephone & Fax: 356-5351/953-3481 E-mail Address:
Evert.Kenk@gems7.gov.bc.ca

Project Summary

The project will deliver the BC Environmental Baseline Registry, a government corporate database. This database will enable those required to monitor the states of our forests, environment, and parks; the effectiveness of land use plans; the outcomes related to various FRBC investments; forest company certification; etc, to make effective, consistent and correct use of FRBC funded and other resources inventory information.

Status

New.

Project Details:

Monitoring is being used to confirm or modify strategic plans and decisions and to support forest industry certification. Given this, it is of paramount importance that available baseline information is used effectively, consistently and correctly. There is a need to rationalize and make more effective the working relationship between the people that need data/information in support of monitoring with those that provide that data/information. Both RIC, the Resources Inventory Committee and LIICC, an interagency land and resource inventory and information coordinating committee, has identified this as a high priority project and an important component of the infrastructure necessary for clients to make effective use of BC's digital forest resource information, and particularly in support of monitoring.

The objective of this project is to build the BC Environmental Baseline Registry. This will be a corporate database that will identify for each criteria/indicator: i) the Standard Data Source to be used to derive the measure; and, ii) the Custodian responsible for specifying a) how the measure should be done and b) providing support (technical advice, QA, tools, etc) to assist those doing the monitoring.

Scope of application would range from regional to provincial. Clients would include all parties (government, industry and public) involved in change, effectiveness or outcome monitoring as relates to the environment.

Ministry objectives supported include State of the Environment, Forests and Parks monitoring; SLUP and LRMP outcome monitoring.

Deliverables:

The project will deliver the production version of the BC Environmental Baseline Registry System by March 31, 2003. This will include; database, operation support tools, Web-based client and content. Extent of content will be dependent upon level of completion of the Corporate Environmental Baseline Project.

Partners/Linkages:

Both LIICC and RIC support this project. The Land Use Coordination Office will provide both administrative and project management support. This project links with the proposed Corporate Environmental Baseline Project.

Consequence of Not Funding:

Consequences of not funding include: i) provincial agencies delivering conflicting monitoring information resulting in loss of public trust ii) incorrect use of information in support of monitoring resulting in aberrant modification to strategic plans and decisions iii) either redundant data collection or redundant analysis if data user unaware of what is available.

Timing Constraints:

Start date June 01, 2002 to ensure completion by March 31, 2003

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$0	$185,000	$35,000	$220,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: British Columbia Geospatial Natural Resource Information Portal

Originators:

Name(s): Evert Kenk Organization: Land Use Coordination Office
Telephone & Fax: 356-53-51/9583481 E-mail Address:Evert.Kenk@gems7.gov.bc.ca

Project Summary

In response to the need for improved access to information this project will deliver the BC Geospatial Natural Resource Information Portal. Its initial focus will be to provide single-window, web-based access to FRBC funded natural resources inventory information, to be followed by other resource inventory information as made available. This project will extend existing government infrastructure and supporting technology for information suppliers to organize and make available their inventory information via this common portal.

Status

New

Project Details:

To date FRBC has funded over $200 million worth of forest resources inventory work. Much of this information is still not readily available to FRBC partners to support FRBC strategic goals, let alone available via the web through a single portal. LIICC, an interagency land and resource inventory and information coordinating committee, has identified this as a high priority project and an important component of the infrastructure necessary to provide broad Web based access to BC's digital forest resource information.

The objective of this project is to make the vast amount of FRBC funded inventory data available via a single web-based portal by extending the existing government infrastructure and supplying the supporting technology for information suppliers to organize and make available their inventory information via this common portal.

The clients include government, industry, First Nations, non-government organizations and the public to address as appropriate issues at the local, regional, provincial and even national level.

Ministry objectives supported include making publicly available, over the internet, information on natural resources and their management in support of Forest Practices Code, Timber Supply Review, Land and Resource Use Planning and Treaty.

Deliverables:

The project will deliver the production version of the BC Geospatial Natural Resource Information Portal. This will include; database, operation support tools, Web-based client and content. The project will be delivered in two stages. Stage 1 delivery, by December 31, 2002 will be a tactical system, with minimal functionality and operational support tools aimed at making FRBC funded inventory data available to clients over the web. Stage 2 delivery, by March 31, 2003 will be the production system, fully supportable and integrated into the government infrastructure.

Partners/Linkages:

LIICC supports this project and LUCO will provide administrative and project management support. This project is indirectly linked to all FRBC funded inventory projects. Any FRBC funding identified for this project will be used to try and leverage Geoconnections (50/50) funding. Partnership with SIFERP, which is delivering the NRIN system for access to FRBC research documents and supporting data ensures compatibility between it and this Portal which will provide access to FRBC inventory data.

Consequence of Not Funding:

Consequence of not funding this proposal is the continued perceived and "real" ineffectiveness of FRBC funded inventory programs – where the information is not being used to meet the longer-term FRBC strategic goals.

Timing Constraints:

December 31, 2002, Stage 1 completion is well timed to capture inventories completed in the 02/03 budget cycle.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$0	$265,000	$130,000	$395,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Natural Resources Project Registry Development

Originators:

Name(s): E.Kenk
Organization: Land Use Coordination Office
Telephone & Fax: 356-5351, 953-3481
E-mail Address: Stu.Hawthorn@gems3.gov.bc.ca

Project Summary

This project will build on the Fisheries Project Registry (FPR) application - a map-enabled database management system, accessible via the internet, which tracks minimum data about the existence, general nature, location and key contacts for specific categories of fish and fish habitat-related projects including inventory, assessment, research, restoration and enhancement, and economic development. The proposed Natural Resource Project Registry will include all natural resource-related projects, many of which have been funded by FRBC. Like the FPR, it will consist of two modules – data entry and query with specifically assigned add/edit privileges to some but query (view) will be available to all including the general public.

This "registry" provides those wishing to do analyses on an area (watershed) with sufficient information to locate the detailed data required for the analyses, to assess whether additional studies are required or to identify data gaps (poorly inventoried watersheds or sparse data). Enables each funding source (eg FRBC) to query and locate projects to which they have contributed funding.

The data from the FPR will be incorporated into the Natural Resources Project Registry when completed.

Status

New project.

Project Details:

Background – prior to the development of the Fisheries Project Registry no single source existed which summarized all fish and fish habitat project activities in a given waterbody or watershed. A similar situation exists for other resource-based project activities making it virtually impossible to access a single source to obtain a summary of current and past activities within a given watershed. With the FPR now available, at least a summary of fisheries-related projects/activities is possible. For example, over 1020 FRBC-funded projects are in the FPR and can be queried and locations displayed on a map.

Objectives – to provide a project registry which summarizes (including mapped location) natural resource-related activities in a given area and enables a wide range of query options to access the data. In addition an expanded suite of tools to query the various types of resource projects will be developed.

Scope (local, regional or provincial) – provincial, regional and down to individual stream or watershed.

Clients – funding agencies (FRBC, Fisheries Renewal BC, Urban Salmon Habitat Program, HCTF, DFO, BC Hydro, etc.,), contractors, general public.

Decision/Ministry objectives supported – reduces duplication of inventory effort, ensures efficient use of resources and provides means of locating source of the detailed data.

Outputs to date if continuing –

Deliverables:

Oracle database containing summary geo-referenced information for each project and activity. Standard Project and Activity Reports, with accompanying printable maps, available to all via the internet.

Partners/Linkages:

A subset of this – the Fisheries Project Registry was partnered and co-funded by DFO and Fisheries Renewal BC. FRBC contributed funds for data entry of FRBC-funded projects. It is anticipated that partners will also contribute to this proposed project in order to add the other natural resource-based inventories. A considerable saving in funding should be realized as the basic registry structure is already in place with the FPR. The bulk of the requested funds would be used for data entry with the remainder directed towards additional query requirements.

Consequence of Not Funding:

Without this project, the ability to access a single source to obtain a summary of all natural resource-based activities within a given watershed will remain impossible. This will lead to increased duplication of inventory effort and analyses would be based on incomplete information.

Timing Constraints:

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$100K	$80K	$50K	$230K

Cost Breakdown:

FY 01-02 ($100K)
- $30K for program development
- $65K for data entry
- $5K for travel

FY 02-03 ($80K)
- $10K for program modifications
- $65 K for data entry
- $5K for travel

FY 03-04 ($50K)
- $45K for data entry
- $5K for travel

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Crown Land Registry Document Atlas

Originators:

Name(s): Blair Matheson Organization: Crown Land Registry (CLRS)
Telephone: 952-5342 E-mail Address: blair.matheson@gems4.gov.bc.ca
Fax: 952-4590

Project Summary:

The original concept of the Atlas project was to create digital images of Crown Land Registry Services (CLRS) documents which would be publicly available through an internet-based access system. CLRS documents are housed within vaults in Victoria and, for security reasons do not leave the building, yet there is a widespread need for access to the information contained. The project proposal approved by Treasury Board in 1997 addressed the goals of reduced operating costs, original records preservation, record security and efficient, timely service delivery. These goals will be achieved within the 2001/02 fiscal year.

Status:

The Tantalis/GATOR system is the avenue through which the Atlas images are made available to government and the public. This system is now operational allowing access to images digitized by the Atlas project. At this time only a portion of images are available and some minor enhancements to the Atlas system will be required over the next year. Since going live in June of 2000, the GATOR system has averaged over 15,000 data inquiries and 430 image downloads per month. The Ministry of Forests has over 450 registered GATOR users that account for nearly half of the inquiries and image downloads. It is expected that as users become more familiar with the system and the data sets become more complete the growth in the system will continue. Although MOF is the primary user of the system, other government agencies, Crown corporations and private industry are beginning to make use of the system.

Documents to be Scanned	Number of Images to be Scanned	Percent of Images Scanned at December 31/00	Expected Date of Completion
Hardshell Official Plans	6,300	92%	Feb-01
Land Act Official Plans	14,500	0%	Dec-01
Crown Grants	235,000	57%	Jul-01
Well Site Plans	13,600	40%	May-01
Field Books	3,500,000	0%	See 'Deliverables

Project Details:

This project was originally approved with a budget of $2.2M by FRBC, however due to budget reductions, allocations from FRBC to the end of fiscal 2001 total $1.275M . Another $127,500.00 is required to complete the project.

Crown grants, field books and surveyed plans are required by a wide variety of CLRS clients. In particular, the Ministry of Forests and the forest industry require information contained in these documents in order to prepare and maintain accurate cadastral mapping programs which are required for land use planning, forest inventory and tenure administration. In addition the Crown grant information is necessary for determining the timber rights which may or may not have passed with each individual grant. This information is only available by reviewing the original grant.

Deliverables:

In 2001/02, scanning of all documents with the exception of field books will be complete using in house contracted services. Further enhancements and development will occur to the system to address functionality issues. CLRS will enhance performance by purchasing $50K worth of hardware from base funds.

The large volume of field books make the wholesale scanning of these documents impractical. As a result it has been decided to scan these documents within 24 hours on an 'as requested' basis. This will spread the cost of scanning over a period of many years and take advantage of the decreasing cost of digital storage.

Partners/Linkages:

The Ministries of Forests, Energy & Mines and Aboriginal Affairs will all benefit from having web based access to this information. Funding has been received from MAA in previous years; other contributions to support the Tantalis/GATOR infrastructure will be requested from these and other entities.

Consequence of Not Funding:

Clients, including the MOF and forest industry will continue to rely on slow and labour intensive access to information. Historical one-of-a-kind documents will physically deteriorate. Opportunities to reduce operating costs will be lost.

Timing Constraints: No critical time constraints.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
1,275,000	CLRS – 300,000 MAA – 75,000	FRBC - 127,500 CLRS – 50-000	FRBC – 0 CLRS – 0	FRBC – 0 CLRS – 0	**FRBC –127,500** **CLRS – 50,000**
		177,500	**0**	**0**	**177,500**

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: BC Parks Boundary Mapping Project (PBM Project)
Submission for: $120,000 for 2001- 02

Originators:

Ministry: **MELP** Organization: **BC Parks Headquarters**
Name(s): **Diane Moen, Manager Land Assembly**
Telephone & Fax: **250 356-9966 (fax) 250 387-5757**
E-mail Address: **Diane.Moen@gems2.gov.bc.ca**

Project Summary

- The PBM Project provides both accurate park legal maps and the BC Parks Digital Data Network (PDD Network).
- These digital park files are crucial in the resolution of Client boundary issues.

Status

- This is a continuing project, established in 1997.
- New BC Parks Boundary Mapping Standards (PBM Standards) were established in 2000/01, in consultation with the Office of the Surveyor General. The PBM Standards ensure accurate and consistent boundaries, meeting British Columbia Land Surveyor (BCLS) boundary survey requirements.
- Existing park legal descriptions and digital data files require updating to bring all park boundaries to the PBM Standards.
- Park boundary accuracy is being increased by the implementation of UTM coordinates (GPS) and an updated base mapping
- To meet the MELP Height of Land Data Warehouse standard, being utilized by Fisheries, Forests and other Government agencies, BC Parks has implemented the process to bring all parks to this standard.
- 2000/01 will complete park digital files for all 700+/- sites and provide an accurate PDD Network.

Project Details:

- 2001/02 funding is essential to ensure the update and completion of all BC Parks digital boundary mapping identified in the 1999/00 PBM Project. These files will facilitate the PDD Network.
- 2001/02 will complete the conversion of remaining BC Parks Key Maps, currently with written legal descriptions, to the PBM Standards.
- 2001/02 would complete the PDD Network, allowing easy user access to all BC Park Digital data.
- These accurate park boundaries facilitate clear boundary location resolution.

- Clients include all government agencies, private land owners, First Nations and private companies (Forest, Mining, etc) with BC Parks as neighbours (common boundaries, park inholding status) or issues with park boundaries.
- The PBM Project has been strongly supported by all Clients due to its importance in ensuring clear boundary location.
- The PBM Standards have been essential in establishing of new parks in the Province, and resolving existing park boundary issues.

Deliverables:

- 1997/2000 the PBM Project is creating accurate legal descriptions and park boundary digital data files.
- The PBM Project has defined a high level of accuracy for implementing its PBM Standards. This is allowing easier boundary location.

Partners/Linkages:

- This project has been directly involved with the Surveyor General Branch to assure consistency with BCLS Survey Standards.
- This PBM Project information is utilized daily by Client agencies in the confirmation of park Boundary location.

Consequence of Not Funding:

- Prompt Client access to accurate and up to date protected area boundaries will not be available.

Timing Constraints:

- BC Parks will have digital data files for all parks in 2000/01.
- Boundary issues, resulting from outdated written legal descriptions or compilation of better base mapping in the 2000/01 project, will have to be identified, resolved and corrected to complete an accurate data source.
- BC Parks will resolve existing park boundary issues derived from the implementation of more accurate base mapping data in 2001/02
- BC Parks will update park boundaries comply with the Height of Land files currently utilized by Ministry of Forestry, Fisheries and other agencies.
- BC Parks will update existing park boundaries to meet the PBM Standards in 2001/02
- BC Parks will provide a public access network (PDD Network) for this project data by March 2002 .

Past Investment and Proposed FRBC Budget:

1997/98	$180,000
1998/99	$140,000
1999/00	$145,000
2000/01	$300,000

2001/02 – BC Parks FRBC Submission - $102,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Benthic Indicators Database

Originators:

Name(s): George Butcher	Organization: Water Inventory Section, RIB
Telephone: 387-9515; FAX 356-5496	E-mail Address:
george.butcher@gems7.gov.bc.ca	

Project Summary

- Capture of stream benthic invertebrate inventory data from a variety of sources (regional MELP, federal & local government, and industry) and conversion to a provincial database.
- Review current baseline coverage for stream benthic invertebrate indicators, conduct a gap analysis to identify missing data and develop recommendations for filling priority data gaps.
- The availability of quality assured benthic inventory data will assist in the direct measure of the biological integrity of streams impacted by forestry activities and will complement the use of water chemistry and measures of physical habitat.
- This project will fill a gap for a missing indicator of aquatic ecosystem health. Benthic indicator data will serve to measure the effectiveness of the FPC and watershed restoration projects and will be useful in reporting on state of the forest and environment reporting.

Status

New although FRBC has funded the collection of benthic indicator data in 3 MELP regions.

Project Details:

Background: Benthic (bottom-dwelling) macroinvertebrates are the basis for most water quality biomonitoring programs in operation worldwide. The reasons for using these organisms to determine stream condition are compelling: they are ubiquitous and easy to sample, critical to fish, relatively sedentary and they reflect cumulative land-use impact. MELP regions are collecting benthic data for use in forestry impact assessments, however there is no central database to house the data or make it widely available.

Objectives:

- Determine business requirements, and do the high level systems design work
- Create a central database including GIS linkage, Web capability
- Capture and convert existing data

- Develop recommendations for qualifications required for persons reviewing benthic invertebrate data for inclusion in database.

Scope: provincial

Clients: MoF , MELP, NGO's, the public

Decision/Ministry objectives supported: This work will provide the database foundation for the development of indicators of aquatic ecosystem condition usable for provincial state of the forest and environment reporting.

Deliverables:

Aug. 2001 - business requirements completed,
Mar. 2002 –system design completed,
Nov. 2002 – database completed,
Mar. 2003 – data capture and conversion completed

Partners/Linkages:

- This project is linked to FRBC-funded water quality objectives setting for community watersheds.
- Linked to the FRBC-funded Species Inventory (SPI) Database
- Environment Canada and Royal BC Musuem will be partners and potential co-funders.

Consequence of Not Funding:

This is an opportunity to provide data that directly measures the biological condition of logged watersheds. Without these data, we must rely on traditional water chemistry and physical habitat measures which are indirect measures.

Timing Constraints:

None known

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget (Jan.15/01)			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$25,500	$60,000		$85,500

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Drinking Water Database

Originators:MELP on behalf of the Directors' Committee on Drinking Water

Name:	Jim Mattison
Organization:	Ministry of Environment, Lands and Parks
Telephone & Fax:	(250) 387-9987, (250):387-1898
E-mail Address:	Jim.Mattison@gems7.gov.bc.ca

Project Summary

The purpose of the project is to develop the business requirements for a drinking water management database. The proposed project would assess the strategic information needs of agencies involved in drinking water management and source water protection, evaluate existing information and applications, identify information and capability gaps, recommend a database design, and develop an implementation plan to construct the database.

Status

This is a new project, though it may well link with, or make use of, ongoing work.

Project Details:

Background

The Directors' Committee on Drinking Water was formed in response to the 1999 Auditor General's report "Protecting Drinking Water Sources". It is made up of Directors or designates of 9 Ministries or agencies with a role in drinking water protection or management. It's initial purpose was to coordinate Government's response to the report, and to bring a measure of coordination among agencies whose mandates relate to drinking water. A second purpose of the Directors Committee is to contribute to the development and implementation of long term measures to improve drinking water quality. During initial discussions about this task, it was recognized that more information is needed to support problem analysis, provincial level risk assessment, options analysis, and decision making.

Objectives

- To support policy, land use, and resource management decisions as they pertain to drinking water.
- To aid in achieving integrated and sustainable use of forest resources.
- To bring together information from a variety of agencies, making it more accessible to identified users.

Clients

The Ministries on the Directors' Committee:

- Agriculture, Fisheries and Food
- Energy and Mines
- Environment, Land and Parks
- Environmental Assessment Office
- Forests
- Health
- Land Use Coordination Office
- Municipal Affairs
- Transportation and Highways

While initially conceived to serve policy-making needs, it is possible that the information identified can be managed in such a way as to be useful for other users, such as provincial and local government land use planners, water purveyors and water users. This could be explored within the context of the project, if desired by FRBC.

Decision/Ministry objectives supported

Supports government's priority of delivering safe drinking water

Outputs to date if continuing

N/A

Deliverables:

Phase One

A report which identifies

- Information needs of Director's Committee members to support policy decisions
- Existing information, it's format, completeness, availability
- Existing, proposed and developing databases or applications that are relevant
- Data gaps
- A model (system/platform/application, etc) that would meet the needs of the Ministries on the Director's Committee.
- An implementation plan to guide government in working toward the recommended model.

The report could likely be delivered within four months of receipt of funding. This timeline allows for RFP, contract award, and considerable time for consultation and report preparation. A shorter timeline could likely be achieved if necessary, though with less flexibility and greater cost risk.

Phase Two

The design would be implemented as per the plan. New information would be collected, new systems/applications built as recommended. Where possible, work would be done in-house, but it is likely that funding will be required for data acquisition, system development and project management. A revised estimate will be provided on completion of phase one.

Partners/Linkages:

No funding partners or linkages identified at this point, however it is likely that other proposals or initiatives may be identified as important sources of information, or components of an integrated database.

Consequence of Not Funding:

- Reduced ability of government to target policy recommendations so as to make the best use of limited resources.
- Reduced ease of access to drinking-water related information
- Longer timelines to completion of database

Timing Constraints:

No concrete constraints.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		Phase 1: $40,000			
		Phase 2: $100,000	Unknown at this time		

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Hydrometric Data Conversion

Originators:

Name: George Butcher
Section, RIB
Telephone & Fax: 387-9515
george.butcher@gems7.gov.bc.ca

Organization: Water Inventory

E-mail Address:

Project Summary

- This project completes the capture and conversion of existing hydrometric and climate data for populating the WIDM database. Data to be included includes those that remain outstanding from 2000/01 work and that of industry and consultants.
- Capture and conversion of existing hydrometric data will enable time development of forestry specific water quality objectives and provide the data needed by industry to optimize road, bridge and culvert design.

Status

- continuing. 2001/02 will be the last year.

Project Details:

This project was initiated in fiscal,1999/2000. The objective was to capture and convert all historic hydrometric and some climate data from all regional offices and headquarters into the new WIDM system, to which all government and industry users will have access. This project will maximize the use of existing data, help avoid costly data duplication and ensure that water quantity information is available for use by the forest industry for design works and for integration into land use planning.

To date, a pilot study of data conversion has been completed for one region and data capture has begun in 3 MELP regions. Delay in the development of WIDM necessiates the continuation of data conversion into 2001/02.

Deliverables:

• Completion of MELP regional office data conversion	-	Sept. 2001
• Capture and conversion of consultant, university data	-	Dec. 2001

Partners/Linkages:

Linked to the completion of the WIDM database.

Consequence of Not Funding:

- Loss of data accessibility and the risk of duplicating inventory effort.

Timing Constraints:

NA

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget Jan.15/01			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$210,000		$20,000	0	0	$20,000.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Water Inventory Data Management (WIDM) Enhancements & Data Conversion

Originators:

Name(s): George Butcher
Organization: Water Inventory
Section, RIB
Telephone: 387-9515; Fax 356-5496
E-mail Address:
george.butcher@gems7.gov.bc.ca

Project Summary

Enhancements and system fixes to WIDM will be required as we move into production and broad usage in 2001/02. These include the deployment of a new security model for the web-based WQDMS portion, additional security protection and installation of TimeStudio analytical tools. Automated water quality data capture is also required as a large amount of data collected in the regions now needs to be entered into WIDM.

This work contributes to the strategic goal of ensuring efficient access to digital water inventory by industry and resource managers.

Status

Continuing.
System development has taken longer than anticipated and enhancements to the system cannot all be completed within 2000/01. Automated water quality data has not been entered because systems development work made the WQDMS component inoperable.

Project Details:

WIDM is an integrated water inventory database linked to GIS that combines hydrologic data (formerly HDMS) and automated water quality data (formerly WQDMS). System development began in April, 1999. There have been delays in getting into production because of the complexity of the system and the use of new Oracle technology. The system is now developed and system testing is underway. A large number of system enhancements will be required as user acceptance testing and training occur and are now scheduled for 2001/02 in the revised project plan. Automated water quality data collected by regions needs to be entered into WIDM (cannot be entered now because the system is still under development and testing).

The scope is provincial.
The clients include industry, consultants and provincial resource managers.

Deliverables:

Enhancements / refinements completion	Sept. 2001
Automated WQ data entry	Nov. 2001
WQ Security model	Jan. 2002
Timestudio Analytical tools	Mar. 2002

Partners/Linkages:

NA

Consequence of Not Funding:

- Industry provided data not secure
- Reduced effectiveness
- Users not enabled with adequate tools for efficient data analysis

Timing Constraints:

NA

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget Jan.15/01			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$168,500	Base ???	$42,500	$40,000		**$82,500**

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Biodiversity Conservation Priorities Planning Tool (revised)

Originators:

Name(s): James Quayle, Conservation Biology Section, Resources Inventory Branch, MELP
Matt Austin, Research and Conservation Section, Wildlife Branch, MELP
Mike Fenger Habitat Protection Section, Resource Stewardship Branch, MELP

Telephone & Fax: (250) 387 9765/(250) 387 2733
E-mail Address: james.quayle@gems9.gov.bc.ca

Project Summary

The development of a Biodiversity Conservation Priorities Planning Tool using existing information will provide a strategic summary of conservation priorities for use in forest planning. This tool will place conservation issues and priorities on a geographic (3rd order watershed) basis, by ranking conservation values, then evaluating the security of those values (i.e. threats they face) and, finally, rating conservation priorities for watersheds based on their biodiversity value and security. Thus, watersheds with high biodiversity values and low security will be given a high priority for conservation efforts. The Biodiversity Conservation Priorities Planning Tool would be accessible via the Internet allowing it to be used by government, First Nations, industry and the general public, using standard government protocol and technology.

Status: New.

Project Details:

Background: Currently there is no provincial summary of biodiversity values, threats or conservation priorities available for use in forest planning (i.e. strategic land use plans, Landscape Units Plans and Forest Development Plans). This has often resulted in planning tables, managers and industry focusing on the conservation of a relatively small number of species. Such an approach leads to a lack of consistency as individuals focus on disparate issues and neglects the importance of a comprehensive strategy that focuses on the elements of biodiversity that are at greatest risk and the areas where efforts to conserve them are expected to be most effective.

The Biodiversity Conservation Priorities Planning Tool will address the need for a provincial summary of biodiversity conservation priorities by compiling existing information. A biodiversity value will be derived using: species occurrences (initially the focus will be on Red and Blue-listed species, and Identified Wildlife, however, this will be expanded over time to other species), the habitat relationships of those species, habitat types that are important to the maintenance of biodiversity and a gap analysis of protected areas. The security of biodiversity by watershed will be evaluated using information on: forest harvesting, road density, proportion protected and proportion in private land (this information is available through the Watershed Ranking Tool developed by Geographic Data BC with FRBC funding). The biodiversity value and security value will be combined to arrive at each given watershed's conservation priority (e.g. a watershed with high biodiversity value and low security would have high conservation priority).

The Biodiversity Conservation Priorities Planning Tool will be made available over the Internet and will provide a common starting point for discussions on biodiversity issues between government, First Nations, industry and other stakeholders. Currently MELP has no funding in place to undertake this type of project. No such base funding is anticipated for the future. A project advisory committee will be established involving government and non-government representatives.

Scope: Provincial.

Clients: Industry, First Nations, academia, NGOs, other government agencies.

Decision/Ministry objectives supported: Contributes to FRBC *Strengthening Sustainable Forest Management* objective by identifying gaps in current information about biodiversity, and providing a provincial baseline of biodiversity against which to assess the sustainability of forestry practices.

Contributes to FRBC targets for *Environmental Baselines* component by reviewing existing baseline data and developing a tool to integrate and make effective use of existing data.

Contributes to the Ministry objective of protection and conservation of a full range of native biological and physical diversity by providing a provincial baseline of biodiversity from which to monitor changes in species distribution province-wide.

Deliverables:

Project Plan	Winter 2001
Province Wide Database by Watershed	Fall 2002
Watersheds Ranked as to Conservation Priority	Winter 2002
Internet website	Spring 2003

Partners/Linkages:

- Project is a three-way partnership between Resources Inventory Branch, Wildlife Branch, and Resource Stewardship Branch, MELP
- Builds upon Watershed Atlas project of Ministry of Fisheries
- Builds upon the Watershed Ranking Tool project of Geographic Data BC
- The Nature Conservancy of Canada has expressed interest in being involved in the development of this tool.

Consequence of Not Funding:

Lose opportunity to prepare the first comprehensive summary of biodiversity conservation priorities for British Columbia that can be used for forest planning.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		25,000	70,000	5,000	100,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Biophysical Map Data Conversion

Originators:

Name(s): Bruce Pendergast (387-9770)
Author: Darren McKellar (356-5072) Organization: MELP RIB
Fax: 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca, Darren.Mckellar@gems6.gov.bc.ca

Project Summary:
The Wildlife Inventory section are custodians of a wealth of pre-RIC biophysical ecosystem mapping in both hardcopy and digital format. The scales of mapping range from 1:20,000 to 1:250,000. Funding is requested to permit this information to be captured into Arc/Info and made available to external clients.

Status:
Conversion and distribution of this material has been on-going as needed. Data from earlier GIS systems has been upgraded (approximately 10 projects), the Wildlife Inventory mapping from the ex-Maps BC has been gathered and archived.

Project Details:
Background: Approximately 50 biophysical inventory mapping projects are presently inaccessible as a result of the format of their data, they are either hardcopy or in outdated GIS formats. This information has been maintained in map cabinets or as back-up files on disk and tape. A concerted effort to access the information has not been undertaken as RIC standards (database & GIS) and databases were not ready. As necessary tools are now complete, and data warehouses are in place the project can begin.

The project is incremental to MELP activities as no effort to accessing this data has been undertaken over the last 10 years. The project will be reviewed by the members of Information Systems Branch and monitored by the Wildlife Data Steering Committee (a joint Resources Inventory Branch, ISB and Wildlife Branch committee).

Objectives: The objectives of this project are to access and update older biophyisical mapping project data and make the it accessible through an external and internal provincial data warehouse. This will allow clients access to the information and be able to analyse and do interpretations for strategic planning activities, as well as for other interpretative activities.

Scope (local, regional or provincial): This project is of provincial scope. Ecosystem and Wildlife Habitat mapping is available in all regions of the province.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, NGOs and First Nations.

Decision/Ministry objectives supported: The many interpretations which are made on the data add value for all partners; maintains and enhances knowledge of ecosystems; helps management for natural diversity on resource lands; helps assess natural diversity values; provides data for decisions relating to sustainable timber supply under TSRs; and maintain and enhance knowledge of wild populations and their habitats.

Outputs to date if continuing: Conversion of 10 biophysical projects, conversion of earlier GIS system data, inventory and tracking of ex-MAPS BC material, distribution of this material to external clients is on-going.

Deliverables: 15 biophysical mapping projects will be loaded into the provincial warehouse the first year, with 25 the second year. Metadata will be documented and made available on the Internet.

Partners/Linkages: Licensee, ministries, NGOs, First Nations and various other groups have been requesting this information.

Consequence of Not Funding: Approximately 20 years of ecosystem and wildlife habitat mapping will continue to be underutilized and/or inaccessible. Digital files will become unusable as GIS file formats change.

Timing Constraints: The various datasets mentioned above can be loaded into the provincial warehouse as soon as they are updated.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		**Proposed Budget**			**Total Proposed**
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$200,000		$125,000	$350,000	$125,000	$600,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Web-based Access to Ecosystem & Habitat Inventory Data

Originators:

Name(s): Bruce Pendergast (387-9770)
Author: Darren McKellar (356-5072) Organization: MELP RIB
Fax: 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca,
Darren.Mckellar@gems6.gov.bc.ca

Project Summary:

System development which supports RIC standard inventory data has been ongoing for the last 5 years. The final step in this process is to set up a well ordered and easy to use access tool for external clients to obtain forest related information. Funding is required to make accessible Terrestrial Ecosystem Mapping (TEM), Describing Ecosystems in the Field (DEIF), Predictive Ecosystem Mapping (PEM), Wildlife Habitat Ratings (WHR) and Broad Ecosystem Inventory (BEI) data. All data will be housed on an NT server which resides outside the MELP firewall making the data accessible to external clients. A Data Registry will be created for easy access to all data.

Status:

New.

Project Details:

Background: The above mentioned datasets administered by the Resources Inventory Branch all have a spatial component which makes access and distribution impossible from an Oracle perspective. At present, the only way to make data available to external clients is through static FTP site which do not allow viewing or the ability to download a subset of the information. Users must take a zipped *.E00 file or nothing. This means if a client is not an Arc/Info user, there is no way for them to view or use the information. This has proved to be a major problem for RIB and FRBC clients.

MELP's ISB have begun the process of reviewing Arc IMS for internal use but as yet external access has not been addressed. All development will be consistent with ISB's technical architecture. The External Access project plan will be reviewed by the members of Information Systems Branch and monitored by the

Wildlife Data Steering Committee (a joint Resources Inventory Branch, ISB and Wildlife Branch committee).

Objectives: The objectives of this project are to make accessible the large quantity of spatial ecosystem, wildlife habitat, and plot data held by MELP RIB.

Scope (local, regional or provincial): This project is of provincial scope. Ecosystem Wildlife Habitat, and Field Inventory data is available for all regions of the province.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipal governments, researchers, NGOs and First Nations.

Decision/Ministry objectives supported: Supports FRBC's & MELPs focus on restoration and enhancement of impacted ecosystems, the many interpretations which are made on the data add value for all partners, maintains and enhances knowledge of ecosystems, helps management for natural diversity on resource lands, helps assess natural diversity values, provides data for decisions relating to sustainable timber supply under TSRs.

Outputs to date if continuing:

Deliverables: External access will be in place for TEM, and BEI by March 2002.
DEIF, PEM and WHR will be complete by March 2003.

Partners/Linkages: Licensee, ministries, NGOs, First Nations and various other groups have been requesting this information.

Consequence of Not Funding: Spatial data will continue to be inaccessible to the bulk of external clients. Analysis and interpretation will be impossible without clients being an Arc/Info shop. Data will continue to be underutilized.

Timing Constraints: Making this data available to external clients as soon as possible is the primary objective.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$50,000		$35,000	$100,000	$65,000	$200,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Ecosystem Field Inventory Plot Database & Conversion

Originators:

Name(s): Bruce Pendergast (387-9770)
Author: Darren McKellar (356-5072) Organization: MELP RIB
Fax: 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca,
Darren.Mckellar@gems6.gov.bc.ca

Project Summary:

A wealth of RIC and pre-RIC Ecosystem Field Inventory data has been amassed by the Wildlife Inventory section of Resources Inventory Branch (MELP). Data was collected at 10,000 plots. The number of requests for the information are high but access is limited as a result of the various formats and locations of the data. Funding is requested to complete a warehouse containing plot data which has been collected to the provincial pre-RIC standard Describing Ecosystems in the Field. The bulk of the data has been already been captured electronically meaning the focus will be on completion of the warehouse, loading of the data, and clean-up routines.

At the present time, MELP does not have an initiative in place to fund the clean up and access of ecosystem field data. The project plan will be reviewed by the members of Information Systems Branch and monitored by the Wildlife Data Steering Committee (a joint Resources Inventory Branch, ISB and Wildlife Branch committee).

Status:

On-going - Electronic capture of thousands of plot forms, access and download of two VAX applications (BC Soil Information System, BC Vegetation Information System), build of initial Oracle tables to hold data (BCSIS, BCVIS, DEIF, VENUS), SQL queries for data access.

Project Details:

Background: Field inventory data collection has a 30 year history in the province. The data consists of a combination of Site Descriptions, Soil, Vegetation, Wildlife, Mensuration, Humus, etc. Distribution of the information to external clients is difficult although most exists electronically. Access is often not possible because of a lack of an integrated warehouse and data access tools.

More often, clients receive hardcopies of the data forms or if they do receive it electronically, it is very hard to decipher in its present flat file keypunched state.

Objectives: To build an integrated Data Warehouse, clean data manually and with automated routines, convert and load data, develop reports/download procedures.

Scope (local, regional or provincial): This project is of provincial scope. Ecosystem Field Inventory data is available for all regions of the province.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, NGOs and First Nations.

Decision/Ministry objectives supported: Field data is used to maintain and enhance knowledge of ecosystems; establish ecosystem objectives; monitor change; identification of candidate areas for protection; maintenance and enhancement of forest ecosystem condition and productivity; conservation of soil resources by identifying areas of concern; restore and enhance impacted ecosystems; and support development by providing specific advice or direction.

Outputs to date if continuing: Electronic capture of thousands of plot forms, access and download of three VAX applications, build of Oracle tables to hold data.

Deliverables:

F02	• Completion of analysis, build of Oracle tables, load routines, warehouse and access routines • clean up and load 2,000 – 3,000 plots
F03	• clean up and load 6,000 – 7,000 plots

Partners/Linkages: Licensee, ministries, NGOs, First Nations and various other groups have been requesting this information.

Consequence of Not Funding: Five years of FRBC funded data conversion effort will not be accessible. Data will not be accessible to external clients except on paper .

Timing Constraints: Making this data available to external clients as soon as possible is the primary objective.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$150,000		$95,000	$175,000		$270,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Ecosystem Mapping and Wildlife Habitat Extension

Originators:

Name(s): Bruce Pendergast Organization: MELP RIB
Telephone & Fax: 387-9770 fax 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca

Project Summary:

The project will provide extension information and workshops of Predictive Ecosystem Mapping, Terrestrial Ecosystem Mapping and Wildlife Habitat Mapping information to forest licensees, and provincial government staff, so that this information can be better used in land use planning initiatives throughout the province. Presently, much of this information is not being put to good use, as many of the licensees that had the mapping done do not understand the interpretative value of the information. This initiative will help provide a better knowledge base and understanding of how this information can be applied to strategic planning initiatives, so that conservation of biodiversity, forest productivity and other resources can be considered.

Status:

A 2-day course on Interpretations of Terrestrial Ecosystem Mapping was developed and last delivered in 1997. The course is now out of date and needs to be replaced with GIS based interpretations, to show the digital power of the information, as well as web-based information.

Project Details:

Background: Over a hundred Predictive Ecosystem Mapping, Terrestrial Ecosystem mapping and wildlife habitat mapping projects have been funded by FRBC since 1995. Where clients of this information are well educated in the potential uses of this inventory, the information provides very good background for strategic planning initiatives. Unfortunately, there is a major knowledge gap in many of the industry and ministry personnel who need to be able to use this information, as they have not been taught the many potential uses for biodiversity planning, site productivity, rare ecosystem potential and other ecological uses.

Objectives: The objectives of this proposal are to provide GIS and web-based extension materials by March 2002, and to provide a series of workshops within each forest region to provide clients with the knowledge to use these important products. The workshops will be completed by Fall of 2002.

Scope (local, regional or provincial): This project is of provincial scope. Ecosystem and Wildlife Habitat mapping is available in all regions of the province.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, NGOs and First Nations.
Decision/Ministry objectives supported: These tools will help industry and ministry staff to be able to assess natural diversity values, such as habitat for a wide range of wildlife species, including rare and endangered species and allow for inclusion of this information in strategic planning activities and for decisions relating to sustainable timber supply under TSRs.

Outputs to date if continuing: n/a

.**Deliverables**:
A needs assessment will be completed to determine the best kinds of tools, and workshop content needs. Extension material will be in the form of GIS tools and web-based information, as well as a providing a series of regional workshops to educate licensees and ministry staff about the multitude of uses for Predicative Ecosystem mapping, Terrestrial Ecosystem mapping and wildlife habitat mapping and inventory.

Partners/Linkages:

Licensee, ministries, NGOs, First Nations and various other groups have been requesting this information.

Consequence of Not Funding: Over $30 million of FRBC funded inventory data will be poorly used or not be used by industry and regional staff when they are involved in strategic planning, as they will not understand the application potential of the information.

Timing Constraints:

[deadlines for project start or finish in order to meet business objectives]

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$20,000		$45,000	$30,000		$75,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Conversion of Wildlife Habitat and Terrestrial Ecosystem Mapping

Originators:

Name(s): Bruce Pendergast Organization: MELP RIB
Telephone & Fax: 387-9770 fax 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca

Project Summary:

The project will provide updating and access to Predictive Ecosystem Mapping, Terrestrial Ecosystem Mapping, and Wildlife Habitat Mapping that was funded through the FRBC Resources Inventory Program. Much of this data was done to early database and inventory standards and needs updating to make it available through the provincial data warehouse, for both internal ministry and external users. This will also allow analysis and interpretation of this information for various land use planning activities to assess biodiversity values, including ecosystem representation, wildlife habitat values, rare species values and rare ecosystem distribution and conservation.

Status

Conversion of projects that used early standards has begun this fiscal year. Consultants have not delivered many of these projects. Efforts are being made to collect all the data from these projects so that conversion can take place.

Project Details:

Background: Over 100 Predictive Ecosystem, Terrestrial Ecosystem mapping and wildlife habitat mapping projects have been funded by FRBC since 1995. Over 70 of these projects are not available in the provincial database, as they do not yet meet the 1998 standards for inventory or database standards in the provincial data warehouse. There is no ministry funding for this activity.

Objectives: The objectives of this project are to update the ecosystem mapping and wildlife habitat mapping and then make them accessible through an external and internal provincial data warehouse, that will allow clients access to the information to be able to analyse and do interpretations for strategic planning activities, as well as for other interpretative activities.

Scope (local, regional or provincial): This project is of provincial scope. Ecosystem and Wildlife Habitat mapping is available in all regions of the province.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, NGOs and First Nations.
Decision/Ministry objectives supported: These tools will help assess natural diversity values, such as habitat for a wide range of wildlife species, including rare and endangered species and allow for inclusion of this information in strategic planning activities and for decisions relating to sustainable timber supply under TSRs.

Outputs to date if continuing: Over 15 Terrestrial Ecosystem mapping projects have been updated and are available in the provincial data warehouse. 25 wildlife habitat inventory projects will be available to put in the provincial warehouse by the end of 2000/2001 fiscal.

Deliverables:

Thirty-five projects per year will be updated and places in the provincial warehouse. This will include Predictive or Terrestrial Ecosystem Mapping, Wildlife Habitat Mapping for a variety of species, and field data for these projects. Client priorities will be developed, to assure the information is available for important strategic initiatives.

Partners/Linkages:

Licensee, ministries, NGOs, First Nations and various other groups have been requesting this information.

Consequence of Not Funding: Over $30 million of FRBC funded inventory data will not be available in the provincial data warehouse, either for external or internal clients. This information will not be available in standardized format to be available for analysis or interpretation for strategic land use planning activities. Ultimately the data will become inaccessible or difficult to access, as is much of the historical habitat and ecosystem data.

Timing Constraints:

[deadlines for project start or finish in order to meet business objectives]

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$450,000		$170,000	$300,000		$470,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: **Predictive Ecosystem Mapping Expert Knowledge-base Warehouse**

Originators:

Name(s): Bruce Pendergast (387-9770)

Author: Darren McKellar (356-5072) Organization: MELP RIB
Fax: 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca, Darren.Mckellar@gems6.gov.bc.ca

Project Summary:

Predictive Ecosystem Mapping (PEM) projects for strategic planning have been underway for the last two years. As projects are completed, their knowledge bases are provided to the ministry, as MELP are the custodians. In order to effectively manage both quality assurance and distribution, and evolution of these tools, a data warehouse is required. Funding is requested to initiate this task.

At the present time, MELP does not have any tools or systems in place, which means this project is incremental. The project plan will be reviewed by the members of Information Systems Branch and monitored by the Wildlife Data Steering Committee (a joint Resources Inventory Branch, ISB and Wildlife Branch committee) and the TEM Alternative Task Force.

Status:

New.

Project Details:

Background: To date, PEM data is being managed manually and anticipated volume will increase significantly. In order that the information be made available to external clients and PEM practitioners a warehouse is required.

Objectives: To create a PEM Model Warehouse, by capturing expert knowledge of ecologists for the information developed for Predictive Ecosystem Mapping, in developing Biogeoclimatic and site/topography/forest cover/site series relationships.

Scope (local, regional or provincial): This project is of provincial scope.

Clients: Clients include Forest and Mining Industry, Provincial Ministries, municipalities, NGOs and First Nations, and PEM Practitioners.

Decision/Ministry objectives supported:
Maintain and enhance knowledge of ecosystems; Maintain and enhance knowledge of wildlife and their habitats; establish ecosystem objectives; maintenance and enhancement of forest ecosystem condition and productivity; the many interpretations which are made on the data add value for all partners; provides data for decisions relating to sustainable timber supply under Landscape Unit Planning; and maintain and enhance knowledge of wild populations and their habitats.

Outputs to date if continuing: n/a

Deliverables: A warehouse populated with all expert PEM models held by the Ministry (approx. 35) by March 31, 2002 and subsequent models by March 31, 2003.

Partners/Linkages: Licensees, ministries, NGOs, First Nations and PEM Practitioners.

Consequence of Not Funding: Data management of PEM models will be a manual process with files backed up on CD. The information will not be readily accessible to external clients.

Timing Constraints: Making this data available to external clients as soon as possible is the primary objective.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		**Proposed Budget**			**Total Proposed**
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$10,000		$45,000	$50,000		$95,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Rare Species (Identified Wildlife) Data Access (revised)

Originators:

Name(s): Andrew Harcombe
Organization: Conservation Biology Section, Resources Inventory Branch
Telephone 387-9798; FAX: 387-2733
E-mail Address: andrew.harcombe@gems2.gov.bc.ca

Project Summary

Conservation Data Centres across Canada, in partnership with Canadian Forest Service and Environment Canada, are initiating a project to provide internet access to rare and endangered species data sets. A GeoConnections application for federal funding is being prepared. FRBC money would be used to bring B.C. data up to a national standard, so data could then be assessed for national ranks for key indicators of biodiversity, rare species. This project will support the strategic FRBC objectives of enhancing knowledge about forests and enhancing environmental values, focussing on endangered species. This project should ensure that information obtained from existing regional investments will be accessible to a wide users group, including industry. This project, for the Access to Information Component, is incremental to MELP work.

Status

new

Project Details:

Background: the federal government is eager to make biodiversity data, especially that which is key to indicators for the biodiversity criteria, readily accessible to users over the internet. A multi-agency partnership, along with the Conservation Data Centres (CDC), is being proposed. It is hoped that each Province will contribute to this project, primarily through the provision of standardized data sets. The BC CDC data needs to be brought to new international spatial standards prior to it being shared in a Canada-wide project. This program will be built on protocols and technology already developed by the Canadian Forest Service.

Objectives:

1. Bring provincial CDC data up to new international standard
2. Complete metadata descriptions of those data
3. make Canada-wide information on rare species readily available over the internet

Scope: provincial/national

Clients; all levels of government, resource industries; general public

Decision/Ministry objectives supported: Natural Diversity for protecting, maintaining, and rehabilitating BC's native wild species and their habitats, and providing better service to the public.

Deliverables:

1) metadata description of the REEDS data set December 2001
2) a dataset brought up to new international data standards ongoing to December 2003
3) a dataset accessible over the internet including metadata, with a protocol for access
   March 31, 2003

Partners/Linkages:

Partners include Environment Canada, Heritage Canada, Canadian Forest Service, Agriculture Canada and other provincial CDCs; major funding is also being requested from GeoConnections (proposal in preparation); knowledge and technology gained from this project will be shared with other access projects.

Consequence of Not Funding: internet access to data sets on rare and endangered species would be delayed and British Columbia would not be a partner in the national effort

Timing Constraints:

GeoConnections funding proposal would dictate only constraint; actual work is not dependent on field activities

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		$35,000	$35,000	35,000	$105,000

Note: The significant cut in Year 1 means that the project needs to be extended into the third year, with a delay in completing one deliverable.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Rare Species (Identified Wildlife) Data Conditioning (revised)

Originators:

Name(s):Andrew Harcombe
Organization: Conservation Biology Section, Resources Inventory Branch
Telephone: 387-9798 ; FAX: 387-2733
E-mail Address: andrew.harcombe@gems2.gov.bc.ca

Project Summary

There is an ongoing need to compile and standardize existing data on rare species, especially that associated with the proposed 130 Identified Wildlife species and ecosystems. Only when all existing information is known can inventory and monitoring be focussed and cost-effective. Recent international standards for rare species occurrence records have changed, improving spatial representations, and all data now in the Conservation Data Centre needs to be reviewed and updated. Ongoing information for Identified Wildlife is critical, since this will be an key indicator for biodiversity in B.C. Data necessary to support Identified Wildlife activities (as defined by the Steering Committee) will drive priorities for this conditioning. This project will support the strategic FRBC objectives of enhancing knowledge about forests and enhancing environmental values, focussing on endangered species, under the Environmental Baselines Component.

Status

continuing

Project Details:

Background: The Association for Biodiversity Information is responsible for setting data standards for the CDC. Recently, new spatial standards have been implemented for geographic occurrences of rare species. These standards improve the representation of precision, areal extent, and ecological buffers. Previously, spatial representation was as a point or line.

Objectives:

1. Condition data already compiled on species that are candidates for Identified Wildlife
2. Compile any other data for these candidates not already obtained, using the new standards

Scope: provincial

Clients: government, industry

Decision/Ministry objectives supported: Natural Diversity for protecting, maintaining, and rehabilitating BC's native wild species and their habitats

Outputs to date if continuing

Deliverables:

1. Updated spatial and attribute data on Identified Wildlife species and ecosystems ongoing until March 31, 2003

Partners/Linkages:

Partners: Association for Biodiversity Information, regional rare and endangered species specialists; data will be used by regional specialists in both the LRMP process and in the creation of Wildlife Habitat Areas under the Identified Wildlife Strategy
Linkages: this project will be critical for the Rare Species (Identified Wildlife) Access project, the Biodiversity Conservation Priorities Planning Tool and the Rare Species (Identified Wildlife) Inventory project, as well as all other provincial programs dealing with rare and endangered species

Consequence of Not Funding: existing data will only be updated slowly and inconsistently, and will be poorly represented spatially

Timing Constraints:

This project needs to be initiated immediately, since several inventory and planning initiatives depend on better quality information; it is not tied to field seasons

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$1,200,000	$2,000,000	$65,000	$80,000		$145,000

Note: Reduced funding for Year 1 probably will not effect main deliverables, although there may be a need for $15K in Year 3; less data will be updated with proposed levels.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: Data Conditioning for Wildlife Species Inventory (revised)

Originators:

Name(s): James Quayle, Andrew Harcombe
Organization: Conservation Biology Section, Resources Inventory Branch,
Telephone & Fax: (250) 387 9765/(250) 387 2733
E-mail Address:james.quayle@gems9.gov.bc.ca

Project Summary

The FRBC-funded Species Inventory data system (SPI) became fully functional and accessible to users in 1999. Due to the need to fast-track production, SPI was developed concurrently with the 36 RIC standard manuals on which it is based. As a result, since their inception, the standards and data system have had a somewhat unstable relationship due to their mutual dependence. This has resulted in the need to quality-assure and extract appropriate data from projects which were collected over this dynamic period.

Status

New.

Project Details:

Background:

The Species Inventory data system (SPI) was developed with FRBC funding. It is intended to house data from all FRBC-funded wildlife inventory projects. SPI is based on 36 RIC standard manuals that describe the different methods for conducting inventory of the province's wildlife species. Because of the need to fast-track system production, the standards manuals and data system were developed concurrently. In 1999, the system become functional and accessible to the both internal and external users; however, the simultaneous development of two dependent products (i.e. the system and the standards on which it is based) resulted in a period of development instability. As a result, there is a need to quality assure, and possibly condition, data which were collected during the period from 1996 to 1999. Much of these data are currently included as "attachments" in SPI, poorly documented, open to numerous disparate interpretations, and inaccessible to any mapping/GIS software.

MELP has not identified funding to take on this task at present or in the future.

Priorities for data conditioning will be set on a project-by-project basis based on consultation with the Wildlife Branch, Habitat Protection Branch, Conservation Data Center and Regional MELP office. Progress will be monitored by the Wildlife Data Steering Committee.

Objectives:

- Reconcile any outstanding differences between the 36 standards for Species Inventory and the Species Inventory datasystem. (SPI is built in such a way that it will accommodate such "soft" changes without further development or formal migration).
- Ensure the structure and content of datasets collected from 1996 to 1999 correspond to the requirements of the Species Inventory data system.
- Create a searchable, limited data, data base
- Address inconsistencies in the data or archive it with appropriate documentation.

Scope: provincial.

Clients: Industry, First Nations, Academia, NGO's, other government agencies.

Decision/Ministry objectives supported:

- contributes to FRBC *Strengthening Sustainable Forest Management* objective of moving forest management toward sustainability by making existing wildlife inventory data accessible.
- contributes to FRBC targets for *Access to Information* component by providing access to information through a common web interface.
- contributes to the Ministry objective of protection and conservation of a full range of native biological and physical diversity by providing access to data which are otherwise difficult to access.

Deliverables:

Project Plan – August 2001
Reconciliation of SPI with existing 36 RIC standards – December 2001
High Priority Projects QA'd and Included in SPI – September 2002
Medium/Low Priority Projects QA'd and Included in SPI – March 2003

Partners/Linkages:

Proposed project enhances utility of the Species Inventory data system. SPI data are used by anyone with an interest in species distribution and abundance. SPI data should be available to facilitate land use management by industry and First Nations. SPI data are also used by the Habitat and Analysis Section, CDC and the Wildlife Branch. Species inventory standards (on which the system is based) were funded jointly by CRII and FRBC.

Consequence of Not Funding:

Access to data from the period 1996-1999 will be compromised. Although some of these project data are accessible in SPI as attachments, they are poorly documented, open to varied interpretations, and inaccessible to mapping/GIS tools.

Timing Constraints:

No specific constraints

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		**Proposed Budget**			**Total Proposed**
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
		20,000	20,000		40,000

Note: This project could use more funding in Year 2, with a possible extension to Year 3, to address the large backlog extracting appropriate data from inventory projects

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Web-based mapping tool for Wildlife Species Inventory

Originators:

Name(s): James Quayle
Organization: Wildlife Inventory Section, Resources Inventory Branch, MELP
Telephone & Fax: (250) 387 9765/(250) 387 2733
E-mail Address:james.quayle@gems9.gov.bc.ca

Project Summary

The Species Inventory datasystem (SPI) was developed with FRBC funding to manage wildlife inventory project data funded by FRBC. SPI currently allows external users to access attribute data via the Internet. SPI contains spatial data from FRBC-funded wildlife inventories, including the coordinates for study areas, sampling units, wildlife observations, and habitat features. It is proposed that a map-based user interface be developed to allow users to effectively utilize the spatial data over the Internet.

Status

New.

Project Details:

Background:
The Species Inventory datasystem (SPI) was developed with FRBC funding. It houses data from all wildlife inventory projects funded by FRBC. This includes attribute data, such as dates, times, methods used, measurements, etc… as well as spatial data, including the coordinates for study areas, sampling units, wildlife observations and habitat features. SPI is available to both internal and external users via the Internet through a Citrix Winframe server. In terms of resource management, the most fundamental queries for such data are spatial i.e. “What species have been observed in this area?”. MELP Information Systems Branch (ISB) is currently working at improving map tools for internal MELP staff who may pose spatial questions using MELP’s GOAT tool. However, external users do not have access to a map-based viewer for the web, and this is not being addressed by ISB. All development will be consistent with ISB’s technical architecture.
A project plan will be reviewed by the members of Information Systems Branch and monitored by the Wildlife Data Steering Committee (a joint Resources Inventory Branch, Information Systems Branch, and Wildlife Branch committee).

Objectives:
Develop a WEB-based tool for viewing SPI’s spatial data in a map context.

Scope (local, regional or provincial):
Provincial (and beyond).

Clients:
Industry, First Nations, Academia, NGO's, Other government agencies.

Decision/Ministry objectives supported:
Contributes to FRBC *Strengthening Sustainable Forest Management* objective of moving forest management toward sustainability by making it easier for industry and others to access wildlife species information in an efficient and effective manner.
Contributes to FRBC targets for *Access to Information* component by providing access to information through a common web interface.
Contributes to the Ministry objective of protection and conservation of a full range of native biological and physical diversity by allowing external users to easily view the locations of species inventory data.
Contributes to the Ministry objective of delivering responsive, innovative programs that deliver core business in a more effective manner.

Deliverables:

Project Plan – August 2001
Species Inventory Coverages – November 2001
Prototype Web-based Application – March 2002
Finalized Web-based Application – September 2002
Revisions to Website to Accommodate – December 2002

Partners/Linkages:

Proposed project enhances the utility of the Species Inventory datasystem (funded by FRBC)
This project will take advantage of the lessons learned building similar map-products (e.g. *FishWizard*) and will work in conjunction with a similar proposal for a web-based map interface to view ecosystem data.

Consequence of Not Funding:

External users will not be able to view spatial data on-line. This will compromise the utility of SPI to external users and diminish the effective value of the data it contains.

Timing Constraints:

[deadlines for project start or finish in order to meet business objectives]

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		30,000	10,000		30,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Vegetation Resources Inventory (VRI) Ecosystem Map Tools.

Originators:

Name(s): Bruce Pendergast Organization: MELP RIB
Telephone & Fax: 387-9770 fax 387-2733
E-mail Address: Bruce.Pendergast@gems4.gov.bc.ca

Project Summary

The project will develop widely applicable analysis tools to utilize "1st level" standardized data sets, collected under the FRBC Resources Inventory Programs, specifically VRI, BGC and TRIM to derive "2nd level" (derived from 1st level) baseline ecosystem and habitat mapping. Second level inventory products – ecosystem mapping and single species habitat mapping - are input needed for "3rd level", indicators-based, inventory projects that develop decision-support knowledge for decision processes such as LRMP and TSR.

Status: Tools are presently under development. Evolution is necessary to match data input changes, methods adjustments and any new definitions of end user needs.

Project Details:

Background: Developing inventory-based information can be described in a 3 level sequence:
1st level inventory such as TRIM, VRI and Biogeoclimatic (BGC) subzone mapping
2nd level inventory, derived from 1st level, such as ecosystem and single species habitat mapping
3rd level inventory, derived from 2nd level, such as indicators-based ecosystem and wildlife habitat values or sensitivity mapping targeted to providing decision support information for land decision processes (e.g. TSR, LRMP).
Much of the interpretative potential of first level inventories - TRIM, VRI and BGC subzone data - is not being applied to supporting planning activities due to the lack of both second and third level analysis tools development. This project is aimed at completing 2nd level ecosystem and habitat mapping tools development to be used in conjunction with VRI mapping where it has taken place in the province. Partially developed analysis tools work needs to be completed, with fine-tuning to read the input data from the new data warehouse structures and to include any method updates to respond to user needs.

Objectives: The objective is to complete toolset development and underlying methods fine tuning for 2nd-level derived ecosystem and habitat mapping. Toolset functions include running analysis methods in software against input data to derive inventory according to the method and to view and assess results.

Scope (local, regional or provincial): Area scope is provincial, to utilize TRIM, VRI, BGC mapping (current and proposed).

Clients: Clients include Forest Industry, Provincial Ministries, municipalities, NGOs and First Nations.

Decision/Ministry objectives supported: Sequential inventory development is fundamental if inventory-based assessments of environmental values and/or sensitivities is to occur. This work
fills data gaps by making maximum use of existing business process data to support spatial and temporal indicator-based information development to support strategic planning.

Outputs to date if continuing: first draft methods and tools developed.

Deliverables:

1: VRI-based Ecosystem Mapping. VRI is a major input and has been developed to support this ecosystem mapping. Deliverables: toolset: ecosystem label and map viewing applications with documentation and methodology by March, 2002.
2: VRI-based Habitat Mapping. VRI is a major input. VRI has been designed to support this product as well. Deliverables: toolset: habitat label and map viewing applications with documentation and methodology by March 2002.

Partners/Linkages:

Partners: industry/ministry partners will be sought. A pilot area will be sought where warehoused VRI is available to the new INCOSADA standards, as applications need to be modified to run against the new VRI data base standard. Industry and ministry clients will have access to the common (public domain) tools once they are developed.

Linkages: project develops a type of 2nd level inventory products thought to be particularly useful for input for the 3rd level inventory information development.

Consequence of Not Funding: 1st level inventories (VRI, TRIM and BGC) funded by FRBC over the past 6 years have companion warehousing initiatives. This warehoused data now needs to be analyzed to develop the 2nd level ecosystem and habitat mapping, to provide input to 3rd level, indicators-based, knowledge development inventory projects. Warehoused 1st level data will be underutilized due to the lack of tools and methods to analyze this data to produce the 2nd level data and subsequent 3rd level information needed to support strategic land planning.

Timing Constraints:

[deadlines for project start or finish in order to meet business objectives]. Estimate 2 years running pilot for e.g. TSR where VRI is available.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$175,600		$45,000	$0	$0	$45,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Digital Terrain, Terrain Stability and Soils Map Library

Originators:

Name(s): Gib McArthur Organization: BC Geological Survey
Telephone & Fax: 250-952-0394 (Office); 250-952-0381 (Fax)
E-mail Address: Gib.McArthur@gems1.gov.bc.ca

Project Summary

The project will continue in 2001-02 by focusing on the capture of new terrain stability mapping from the forest industry and by completing the capture of the backlog of existing soil maps. This will ensure that these two important map libraries continue to serve both forest, agriculture as well as public clients by providing efficient Internet access to complete coverage of all maps in both these libraries. This serves the objectives of Forest Renewal (and partners) by assisting the Forest industry in the efficient management of these map resources which are essential for operational planning by forest companies.

Status: Continuing

Project Details:

Background: Beginning in 1996 the Geological Survey Branch (GSB) received funding to digitally capture all provincial terrain mapping and terrain stability mapping submitted by the forest industry under the Forest Practices Code. These maps were compiled into a digital library and are being made available free of charge over the Internet from a Terrain/Soils Mapping website. Similarly in 1999 the GSB received funding to extend this project to include soils mapping supplied by the Ministry of Agriculture and Food.

Objectives: To provide Internet access to all terrain, terrain stability and soils mapping for BC

Scope: Provincial

Clients: Forestry, agriculture, fresh water fishing, mining and mineral exploration, as well as land use planners concerned with wildlife conservation, groundwater resources, and identification of natural hazards; the public and public interest groups.

Decision/Ministry objectives supported: In addition to supporting forest and agriculture sector clients the map library is also of value to MEM's mining sector clients.

Outputs to date if continuing: As of November 30, 2000, Provincial terrain mapping and forest industry terrain stability mapping digitized (100% complete) and posted to Terrain/Soils test website (75% complete for raster images and 18% for 'old terrain data', 0% for 'new terrain data'); Soils mapping digitized (43% complete) but not yet posted to Terrain/Soils website.

Deliverables:

1. Capture and posting of all terrain stability mapping received in 2001-02 by March 31, 2002.
2. Capture and posting of all backlog soils mapping by March 31, 2002

Partners/Linkages:

Forest industry, Ministry of Forests and Ministry of Agriculture and Food provide raw data to the project.

Consequence of Not Funding:

If the project is not funded the terrain stability mapping will not be kept current and up to date and clients will lose confidence that the Terrain/Soils website is the authoritative provincial map library resource for this type of data. Similarly the capture of soils mapping will be incomplete and clients will be less inclined to access an incomplete map library.

Timing Constraints:

Funding is required to commence in April 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
1,240,000		100,000	150,000	150,000	400,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: 3D-Display of Forest Spatial Data via the Internet

Originators:

Name(s): Douglas Say
Organization: Ministry of Forests
Telephone & Fax: 250 387 9509, 250 387 5999
E-mail Address: doug.say@gems.gov.bc.ca

Project Summary

This project will create the internet/web interfaces to view, query and download 3 dimensional forestry spatial data including vegetation cover, recreation and visual quality. This project will be beneficial to FRBC by:

1) Allowing easy and broad access to data some of which was collected under FRBC funding
2) Supporting FRBC decision making by allowing quick and easy access to forest attribute descriptions.
3) Easy and flexible query mechanism for queries of integrated data which will provide data for investigations.

Status

New

Project Details:

Some forestry decisions are best made when data is represented in 3 dimensions. Examples may be decisions around riparian areas, recreation and visual quality. This project will create a web interface to view and query forestry data in 3 dimensions specifically vegetation cover, recreation and visual quality.

This project would use data covering the entire province so provincial summaries would be possible as well as narrowing the area to a single polygon. This flexibility and information dissemination would be useful to the general public, FRBC decision-makers, Licensees for communication around certification, and forestry consultants not mentioning many public sector organizations.

Deliverables:

Create an a web interface to view and query forestry data in 3 dimensions:

Creation of generalized tools for theme access and draping	March 2002
Stream Network	Sept 2002

Vegetation Cover	March 2003
Recreation	Sept 2003
Visual Quality	March 2004

Partners/Linkages:

This project melds with work of the Resources Data warehouse and so is of interest to the Ministry of Environment, Lands and Parks.

Consequence of Not Funding:

Not funding this project could lead to serious errors in decision making in areas such as timber supply review.

Timing Constraints:

As this project is closely tied to work on the Resources Data Warehouse the first year would be background and investigative and ramp up to production offerings in the second and third years.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
		30,000	60,000	60,000	$ 150,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Results Data Warehouse (RDW) Development

Originators:

Name(s): Alf Kivari Organization: MoF
Telephone: 356-1127 E-mail Address: Alf.Kivari@gems5.gov.bc.ca

Project Summary

The Results Data Warehouse (RDW) supports regional and industrial sample processing for all Vegetation Resources Inventory (VRI); Provincial Permanent Sample Plot and Volume and Decay ground sample projects. This project will see the completion of the RDW System to include the design and development of sample processing (compilation) functions for the Provincial Change Monitoring Samples, VRI Ground Samples and Net Volume Adjustment Factor samples. Permanent sample plot compilation will be redesigned to incorporate new height-diameter algorithms and decay/waste methodology. All existing and new functionality will be documented for a knowledge transfer to both MOF staff and the industrial sector. Web-based data transfer protocols will be developed to enable off-site compilation and reporting. The RDW System will be available to the private sector upon the completion of this project.

Status

Today the system handles all of the above mentioned ground sample data, but requires significant manual intervention by developers and expert Forestry staff. The RDW system is evolving towards a vision of WEB based data delivery and turnover to Ministry staff or the private sector.

Project Details:

Background

The Results Data Warehouse (RDW) supports the information and processing needs of ministry and industry through the provision of processed sample plot data that support decision-making for timber supply and land use planning. This project is a continuation of an existing FRBC-funded project that has replaced older legacy systems by providing efficient and responsive sample data processing and client delivery. The RDW is an essential component of many provincial sample programs and provides all sample processing capability for permanent sample plots (PSP), temporary sample plots (TSP), Destructive (volume and decay) Sampling, Audit Program sampling, Vegetation Resources Inventory (VRI) sampling and the new Change Monitoring Inventory Program. This project will see new development of compilation algorithms, utilities, database structures and documentation. The RDW focuses on the compiled results from over 80,000 ground sample measurements, which includes over 8,000,000 tree measurements. The quantity of data increases annually.

Objectives

Development of a multi-component system to process and provide sample information, specifically:redevelopment of the Electronic Provincial Sample List (EPSL), access to the Sample Plot Database (SPD), compilation software, tree height/diameter estimation software, reporting software, all with a view to making the system WEB enabled and useable by all within the BC Forestry community

Process

This project responds to a request by the Forest Productivity Council to develop sample compilers and reporting systems for the Provincial PSP Program. It further responds to needs of the Resources Inventory Committee and the Chief Forester for the implementation of the new Vegetation Resources Inventory. Growth and yield land inventory data collected by the regions and industry are compiled and returned to clients. Sample compilation systems are developed entirely in support of external clients, largely regional and industrial-led ground sampling projects.

Scope (local, regional or provincial)

The RDW is the repository for compiled Provincial forestry ground sample data which in turn supports decision making at the local, regional and provincial level.

Clients

- Chief Forester for Timber Supply Reviews (TSRs).
- Industry as input to TSR and land-use planning.
- Headquarters MoF incl. RIB, Forest Practices; Research: and Forest Regions and Districts.
- Universities and consultants.
- Federal Government Forestry initiatives such as National Forest Inventory (NFI).
- Decision/Ministry objectives supported.
- Timber Supply Review (TSR).
- Vegetation Resources Inventory program objectives and Permanent Samples Plot program.
- Stand model development projects (e.g. TASS, VDYP7, MGM and Prognosis) and Research and analysis projects.

Outputs to date if continuing

Components in use: load and compilation modules for PSP/TSP and VRI sample data, a database, management utilities and draft documentation.

Deliverables:

RDW Change Management as new processing capabilities are required	Annual
Completion of plan and prototypes for Web access	September 31, 2001
Completion of all RDW components including documentation	December 31 2001
Knowledge Transfer to other MoF staff	December 31, 2002
Web-based compilation and delivery	December 31, 2003
Public sector transfer readiness	March 31, 2004

Partners/Linkages:

Linked to corporate Sample Plot Database (RIB), all regional and industrial data collection programs, forestry initiatives such as VRI and NFI, and MoF technical directions.

This project is incremental to the ministry mandate and follows a transparent planning process through direct response to sampling initiatives requested by the Forest Productivity/Forest Resources Inventory Councils and industry.

Consequence of Not Funding:

- Goals of system will not be realized, data not as easily available for modeling and decision-making also delays in client data delivery.
- Inability to process regional/industrial ground sample data in a timely and cost-efficient manner.
- Increased system costs to maintain an incomplete system.
- Increased cost to FRBC for development of similar systems by the contracting community.
- Compilation of ground samples will be slowed considerably resulting in major backlogs.
- The compilation of non-standard samples or new sample types resulting from IFPA's, VRI Change Management, etc. will cease; resulting in an inability to develop statistical adjustments.
- Delays in funding could jeopardize further progress on this project.

Timing Constraints:

Requires initiation by April 1, 2001

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
1,200,000		185 000	245 000	245 000	675,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project Name: ***BEC database update to enhance accessibility***

Originators:

Name(s): Del Meidinger and Will MacKenzie
Organization: Research Branch, MoF
Contact Telephone & Fax: 387-6688 fax: 387-0046
Contact E-mail Address: Del.Meidinger@gems2.gov.bc.ca

Project Summary

The Biogeoclimatic Ecosystem Classification project of the Ministry of Forests has over 25,000 field plots describing site, soil, vegetation and mensuration information. These plots are primarily of mature to old forest ecosystems and provide the basis for BC's world-class ecological classification. This dataset constitutes a "data mine" that can provide invaluable information for many resource management and research needs in British Columbia.

Originally, not all field-collected plot information was entered into digital files. Over time, changes in codes, improper data entry and data conversion has accumulated errors in existing digital data sets. Funding is required to clean-up this data so that it can be easily accessed and used for management and research purposes.

Status

New project. However, some data was cleaned-up in fiscal 1999-00 with 'excess' FRBC framework funds and some base funding has been allocated.

Project Details:

Background: BEC plot data is a legacy of high quality point data for ecosystem description. Continuing classification initiatives, mapping projects, and research applications means that most of this historical data is still actively used. Requests for information from government staff, consultants and researchers are common. BEC plot data is used by MoF for description and classification of ecosystems, and MoELP for description of rare ecosystems (Conservation Data Centre). Consultants use BEC plot data for ecosystem mapping projects, both TEM and PEM.

Originally, not all of the plot information was entered from plot cards into digital files (e.g., site and soil information is not all entered) and some vegetation and site data were improperly entered or reflect out-of-date codes. A clean provincial BEC dataset would aid future ecosystem mapping and habitat supply modeling initiatives and would provide a source of information on terrestrial ecosystems of BC for public information and as a data source for future mapping and classification projects.

Approximately half the data has been cleaned-up with FRBC Framework and some base funding.

Objectives: Complete clean-up of BEC plot data to produce a high quality, easily accessible provincial dataset of ecosystem description and classification information. This will allow timely response to requests for information.

Scope: Provincial. BEC data is managed and distributed from a central database, although it is collected regionally.

Clients: Public requiring forest ecosystem data; consultants conducting ecosystem mapping or habitat supply projects; scientists and researchers conducting ecosystem studies.

Decision/Ministry objectives supported: Project supports Corporate initiative to increase access to public data.

Deliverables:

March 2002: Clean plots for one-third of the remaining dataset (approximately 3500 plots).

March 2003: Complete clean-up of dataset and make available to users via on-line request form (approximately 7000 plots).

Partners/Linkages:

Access to BEC data is required to support MoF, MoELP and forest industry projects in ecosystem mapping and habitat supply modeling.

Consequence of Not Funding:

Only very limited funding is available for BEC data clean-up. With present funding, clean-up would take 6-8 years. Because many resource management policies are based upon the BEC classification system, efficient access to this data is critical for many initiatives. This project will make data available to support several current initiatives in a timely manner:

- identification of OGMAs in landscape unit planning requires stand structure and stand composition data to assess 'old growthness';
- habitat supply modeling requires seral ecosystem development models;
- carbon balance modeling requires soil data;
- botanical forest products inventory requires distribution and abundance of understorey species).
- Support update of existing subzone classifications or new classification initiatives such as parkland (assist in upper elevation operability limits) and non forested ecosystems (rare ecosystem, range and wildlife assessment).

Timing Constraints:

Project requires funding by August 2001.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
45,000	20,000	35,000	60,000		95,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:

Project name: Fire history database interface

Originators

Names: John Parminter
Marvin Eng

Organization: Research Branch, MoF
PO Box 9519, Stn Prov Govt
Victoria BC V8W 9C2

Telephone: (250) 356-6810 (JP)
Telephone: (250) 387-2710 (ME)

Fax: (250) 387-0046

E-mail address: john.parminter@gems7.gov.bc.ca marvin.eng@gems5.gov.bc.ca

Project summary

This project addresses the strategic objective of strengthening sustainable forest management through the provision of information about historic wildfire activity via a web-based interface. As part of the access to information component, this spatial and temporal database would permit a wide variety of users to view or download information about historic wildfire activity in an area of interest. Such information is valuable for forest, range, wildlife and protected area management. Knowledge of the historic extent of natural and human-caused wildfires enables risk assessment, evaluation of the historic impacts of man on the environment and could be incorporated into timber supply models as reduction factors and/or probability functions. Landscape unit and other land use plans already incorporate generalized natural disturbance regime information and such planning processes would greatly benefit from the provision of more detail.

Status: New

Project details

Background: two existing databases, collectively called the "fire atlas," contain the known information about historic wildfire activity in B.C. The old fire atlas covers the period from 1919 to the early 1940s and consists of roughly 200 linen maps at several different scales. The new fire atlas (1520 mylar overlays) covers the early 1940s to 1988 and is at a scale of 1:125 000. Information on subsequent fires greater than 200 ha exists in digital form.

The data on these maps are being digitized by staff at the Northern Forestry Centre of the Canadian Forest Service and the digital data files will be available, following final quality control, during fiscal year 2000/2001.

Objectives: the objective is to develop a web-based interface to access the historic wildfire database. The interface will allow both viewing and downloading of the data, depending on the specific requirements of the user. There will also be links to a dataset that provides much more data for individual fires from 1950 onwards.

Scope: provincial in area; data from 1919 to 1988 for fires > 20 ha, after 1988 for fires > 200 ha.

Clients: all levels of the MoF and MoELP; forest industry; NGOs and general public.

Decision/Ministry objectives supported: risk assessment in the Protection Program and Timber Supply Review, landscape unit and higher level planning, criteria and indicators.

Deliverables

Project phases will consist of: definition of project scope and client needs, design of interface, testing, evaluation, quality control and implementation. As a one-year project, deliverables will be due at the end of fiscal year 2001/2002.

Partners/linkages

The Canadian Forest Service is a partner through in-kind contributions of staff time and equipment use. The Protection Program of the MoF owns the mapped data, while Research Branch is the custodian. These data have already been provided (in paper form) to many users in the province, including two IFPA holders and one EFMPP. Such requests will continue and increase in the future.

Consequence of not funding

The lack of an interface to the data would limit access to users who have the software required to view and use the information (which would have to be delivered by some other mechanism such as FTP). More staff time at Research Branch would be directed towards servicing client needs rather than allowing the clients to directly view or download and use the data themselves.

Timing constraints

Implementation of the fully-functional interface depends on obtaining the complete digital dataset from the Canadian Forest Service. However, the design, testing, evaluation and finalization of the interface can take place without the entire dataset being available.

Past investment and proposed FRBC budget

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
None	CFS – unknown	$15,000			$15,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Corporate Resource Management Data Warehouse – Forest Access Tools

Originators:

Name(s): John Ellis Organization: Ministry of Forests
Telephone & Fax: 250 387 8400, 250 387 5132 E-mail
Address:john.ellis@gems.gov.bc.ca

Project Summary

This project will accelerate the creation of internet/web interfaces to view, query and download spatial, attribute, and image data residing in the Corporate Resource Management Data Warehouse including orthophotos. This project will be beneficial to FRBC by:

4) Allowing easy and broad access to data, some of which was collected under FRBC funding
5) Supporting FRBC decision making by allowing quick and easy access to forest attribute descriptions.
6) Providing an easy and flexible query mechanism for queries of integrated data which will provide data for investigations, land claim negotiations, operational and higher level plan development, etc.

Status

New to this funding.

Project Details:

This project will accelerate the creation of internet/web interfaces to view, query and download data residing in the Corporate Resource Management Data Warehouse including orthophotos. This project will form the basis from which may other projects will start (eg 3d display of forestry data, recreation mapping and viewing, fire history)

Specifically the objectives of this project include:

- Query facilities and interface which would allow for the querying and display (including spatial) of all forest attributes in the Forest Inventory and Vegetation Inventory;

- Query facilities and interface which would allow for the querying and reporting of other data sets in the data warehouse such as environmentally sensitive areas, range, sample plot location, tenure, harvest volumes, and other themes;
- Queries and display of the integration of these data sets;
- Display and download of orthophotos;
- Downloading of this data by user specified areas for further analysis;

This project would use data covering the entire province so provincial summaries would be possible as well as narrowing the area to a single polygon. This flexibility and information dissemination would be useful to the general public, FRBC decision makers, Licensees for communication around certification, and forestry consultants not mentioning many public sector organizations.

The infrastructure has been purchased and data structures are being built and populated. Reporting and queries have only been created on a demonstration basis.

This investment in new technologies will be able to be leveraged by all participants in the data warehouse.

The Ministry of Forests plans to spend $200,000 on this project, for software purchase and development.

Deliverables:

- Query facilities and interface which would allow for the querying and display (including spatial) of all forest attributes in the Forest Inventory and Vegetation Inventory;
- Query facilities and interface which would allow for the querying and reporting of other data sets in the data warehouse such as environmentally sensitive areas, range, sample plot location, tenure, harvest volumes, and other themes;
- Queries and display of the integration of these data sets;
- Display and download of orthophotos;
- Downloading of this data by user specified areas for further analysis;

Partners/Linkages:

Agencies contributing to the Corporate Resource Management Data Warehouse.

Consequence of Not Funding:

If this project is not funded then the deliverables will not be available for several years hence. Current pressures around data availability for certification and for creation of operational and higher level plans will be hindered and Provincial and industry credibility may be affected.

Timing Constraints:

Demand for this product is growing to the extent of effort currently becoming fragmented. Immediate execution will consolidate effort and results.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
	$325,000	$150,000	$240,000		$390,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Accelerated INCOSADA Data Conversion

Originators:

Name(s): Al Becker Organization: Ministry of Forests
Telephone & Fax: 250 387 5727, 250 387 5132 E-mail Address:
al.becker@gems4.gov.bc.ca

Project Summary

This project will provide for the acceleration of the conversion of INCOSADA data across the province. This project will be beneficial to FRBC by:

7) Providing clean and consistent data for loading into a corporate data warehouse.
8) Supporting decision making by having clean GIS ready data available for analysis purposes.
9) Accelerating the pace of loading so that uptodate and readily accessible resource information is available sooner for planning, analysis and reporting purposes.

Status

New

Project Details:

INCOSADA (Integrated Corporate Spatial and Attribute Database) is a major forestry initiative to create a current, complete and managed database of information about the land base. It will facilitate the creation of a systematic, multi-purpose, mapping infrastructure for forestry in the public sector. When complete, INCOSADA will provide a standardized set of corporate spatial and attribute data (i.e., map and text data) with common database structures.

The data conversion process has recently begun and is expected to take up to three years to complete. This project would provide for the acceleration of conversion and loading of INCOSADA data and make the data available sooner for resource management purposes. It would focus on the following data features:

- watershed boundary realignment
- road network
- vegetation inventory data.

Deliverables:

- consistent, quality controlled, GIS ready data

- accelerated loading for 10 forest districts

Partners/Linkages:

Ministry of Forests, Corporate Resource Management Data Warehouse

Consequence of Not Funding:

Not funding this project would mean delays in having the updated resource information available for use in analysis and decision making processes.

Timing Constraints:

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
	177,000	70,000	130,000		$ 200,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Recreation Data Access and Webmapping

Originators:

Name(s): Ted Murray Organization: Ministry of Forests
Telephone: 356-0304 Fax: 387-1467
E-mail Address: ted.murray@gems6.gov.bc.ca

Project Summary

In keeping with FRBC and the Ministry of Forests' objective to provide open access and availability of data over the internet, a web application is being developed, enabling the viewing, analysis and exchange of spatial and attribute data. The goal of this project is to enable government staff, licensees, and the public to view, query, download and upload spatial and attribute data related to recreation inventory over the Internet. The user will be able to view data and colour-themed maps of each inventory of the whole province, single forest region, forest district, mapsheet or polygon, including TFL lands. The user may select which features they want turned on and will have zoom in, zoom out, pan, magnify, search and redline functionality, plus be able to perform basic queries on basemap and recreation inventory attribute data. They may also link to other data sets such as Parks for more detailed information, where it is available.

Status

Continuing – IMG has initiated this project this fiscal to prove functionality and provide a working presence in this new technology. This project will accelerate the provision of internet access, update, redline and download capability to recreation inventory data and products (the acquisition of which was previously funded by FRBC) for strategic and operational planning tables, investigations, land claim negotiations, TSR, C&I and the public..

Project Details:

Background:

The standardization and rollover of recreation resources inventory data (Recreation Features (RFI), Recreation Opportunity Spectrum (ROS) and Visual Landscape (VLI) Inventories) to common standards was initiated through FRBC funding in 1994 and completed in 2000. In 1999/00, prior to a ministry decision to use ARC-IMS as the standard webmapping tool, a pilot, FRBC funded, GeoMedia webmapping project was undertaken . This was successful in proving web mapping technology and functionality and has provided additional impetus in moving the ministry towards sharing data over the internet. We now wish to build upon the knowledge gained and to incorporate this into the larger corporate context, taking advantage of the MOF data warehouse and

INCOSADA data management tools available. Thus, this pilot application needs to be developed in an ARC-IMS platform and expanded to meet additional client needs.

Objectives:

Scope

This data is applicable and useful at all levels of government. It is collected at a 1:50,000 scale for the entire province, including all TSA and TFL lands. Each inventory is available across the province in 41 district tiles (The Bulkley/Cassiar Forest District is split into two separate tiles).

Clients

The clients of this data are: MOF staff, other ministries' staff, licensees, planning tables, investigations, land claim negotiations, FRBC, international NGOs and the public.

Decision/Ministry objectives supported

This data is used in strategic and operational plans, investigations, land claim negotiations, TSR and public information and supports FRBC, MOF, provincial and federal government objectives and public requests for easier access to corporate data and derived products. It effectively demonstrates in an unparalleled way, to the international community, that BC incorporates non-timber values in land use and sustainable forest management decisions.

Outputs to date:

RFI, ROS and VLI - Through FRBC funding, 21,048 files have been edited, standardized and rolled over to 3 sets of 41 district GIS-ready files (tiles). Seven districts have been colour-themed separately for RFI (by significance and sensitivity); for ROS (by ROS class); for VLI (by visual sensitivity class, visual absorption capability, existing visual condition, recommended visual quality class and established visual quality objective). These products have been placed on the web, as a pilot, for interactive viewing and downloading (data not to new district boundaries).

Recreation Sites and Trails – a consolidation of several separate data sets provides this information for selected districts over the web. More will be added as data becomes available and as funding permits.

Quad Base Maps – 7016 TRIM I, 1:20,000 base maps have been merged into 1847 quads (4 trim maps) as a base for recreation inventory and other datasets suited to a scale of 1:50,000. TRIM lakes have been polygonized and labeled (with names) for seven forest districts. Quads are being converted to TRIM II where it is available.

Deliverables:

A web application linked to the MOF data warehouse, containing GIS-ready data processed to the latest district boundaries, which enables the viewing and exchange of province wide recreation inventory spatial and attribute data with all other interested parties.

Partners/Linkages:

Partners: MOF (IMG, RIB, RTE, FPB, INCOSADA), Tree Farm Licensees

Linkages: MOF, MELP, SBTC, MAA & CFS

Consequence of Not Funding:

Inability to effectively share data with others, thus hindering the timely and efficient support for strategic and operational planning processes and government decision making.

Timing Constraints:

This project is being initiated in 2000 to pilot MOF's web mapping functionality using SDE, ARC-IMS, INCOSADA update tools and its new data warehouse. Thus, it would be advantageous to complete the project as soon as possible to prove functionality and enable RIB and other MOF data sets to be developed within the time frame allocated.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$37,000*	$101,000**	106,000	50,000	25,000	181,000
$1,965,456***	$1,391,000				

* Past FRBC investment in pilot GeoMedia web mapping application.

**Only includes Recreation Webmapping expenditures. Does not include MOF data warehouse expenditures.

***Past FRBC investment in the Recreation Resources Inventory database which will be used in this web application.

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Results Data Warehouse (RDW) Development

Originators:

Name(s): Alf Kivari Organization: MoF
Telephone: 356-1127 E-mail Address: Alf.Kivari@gems5.gov.bc.ca

Project Summary

The Results Data Warehouse (RDW) supports regional and industrial sample processing for all Vegetation Resources Inventory (VRI); Provincial Permanent Sample Plot and Volume and Decay ground sample projects. This project will see the completion of the RDW System to include the design and development of sample processing (compilation) functions for the Provincial Change Monitoring Samples, VRI Ground Samples and Net Volume Adjustment Factor samples. Permanent sample plot compilation will be redesigned to incorporate new height-diameter algorithms and decay/waste methodology. All existing and new functionality will be documented for a knowledge transfer to both MOF staff and the industrial sector. Web-based data transfer protocols will be developed to enable off-site compilation and reporting. The RDW System will be available to the private sector upon the completion of this project.

Status

Today the system handles all of the above mentioned ground sample data, but requires significant manual intervention by developers and expert Forestry staff. The RDW system is evolving towards a vision of WEB based data delivery and turnover to Ministry staff or the private sector.

Project Details:

Background

The Results Data Warehouse (RDW) supports the information and processing needs of ministry and industry through the provision of processed sample plot data that support decision-making for timber supply and land use planning. This project is a continuation of an existing FRBC-funded project that has replaced older legacy systems by providing efficient and responsive sample data processing and client delivery. The RDW is an essential component of many provincial sample programs and provides all sample processing capability for permanent sample plots (PSP), temporary sample plots (TSP), Destructive (volume and decay) Sampling, Audit Program sampling, Vegetation Resources Inventory (VRI) sampling and the new Change Monitoring Inventory Program. This project will see new development of compilation algorithms, utilities, database structures and documentation. The RDW focuses on the compiled results from over 80,000 ground sample measurements, which includes over 8,000,000 tree measurements. The quantity of data increases annually.

Objectives

Development of a multi-component system to process and provide sample information, specifically:redevelopment of the Electronic Provincial Sample List (EPSL), access to the Sample Plot Database (SPD), compilation software, tree height/diameter estimation software, reporting software, all with a view to making the system WEB enabled and useable by all within the BC Forestry community

Process

This project responds to a request by the Forest Productivity Council to develop sample compilers and reporting systems for the Provincial PSP Program. It further responds to needs of the Resources Inventory Committee and the Chief Forester for the implementation of the new Vegetation Resources Inventory. Growth and yield land inventory data collected by the regions and industry are compiled and returned to clients. Sample compilation systems are developed entirely in support of external clients, largely regional and industrial-led ground sampling projects.

Scope (local, regional or provincial)

The RDW is the repository for compiled Provincial forestry ground sample data which in turn supports decision making at the local, regional and provincial level.

Clients

- Chief Forester for Timber Supply Reviews (TSRs).
- Industry as input to TSR and land-use planning.
- Headquarters MoF incl. RIB, Forest Practices; Research: and Forest Regions and Districts.
- Universities and consultants.
- Federal Government Forestry initiatives such as National Forest Inventory (NFI).
- Decision/Ministry objectives supported.
- Timber Supply Review (TSR).
- Vegetation Resources Inventory program objectives and Permanent Samples Plot program.
- Stand model development projects (e.g. TASS, VDYP7, MGM and Prognosis) and Research and analysis projects.

Outputs to date if continuing

Components in use: load and compilation modules for PSP/TSP and VRI sample data, a database, management utilities and draft documentation.

Deliverables:

RDW Change Management as new processing capabilities are required	Annual
Completion of plan and prototypes for Web access	September 31, 2001
Completion of all RDW components including documentation	December 31 2001
Knowledge Transfer to other MoF staff	December 31, 2002
Web-based compilation and delivery	December 31, 2003
Public sector transfer readiness	March 31, 2004

Partners/Linkages:

Linked to corporate Sample Plot Database (RIB), all regional and industrial data collection programs, forestry initiatives such as VRI and NFI, and MoF technical directions.

This project is incremental to the ministry mandate and follows a transparent planning process through direct response to sampling initiatives requested by the Forest Productivity/Forest Resources Inventory Councils and industry.

Consequence of Not Funding:

- Goals of system will not be realized, data not as easily available for modeling and decision-making also delays in client data delivery.
- Inability to process regional/industrial ground sample data in a timely and cost-efficient manner.
- Increased system costs to maintain an incomplete system.
- Increased cost to FRBC for development of similar systems by the contracting community.
- Compilation of ground samples will be slowed considerably resulting in major backlogs.
- The compilation of non-standard samples or new sample types resulting from IFPA's, VRI Change Management, etc. will cease; resulting in an inability to develop statistical adjustments.
- Delays in funding could jeopardize further progress on this project.

Timing Constraints:

Requires initiation by April 1, 2001

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
1,200,000		185 000	245 000	245 000	675,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: Spatial Forests Road Management System

Originators:

Name(s): John Ellis Organization: Ministry of Forests
Telephone & Fax: (250) 387 8400, (250) 387 5132 E-mail
Address:john.ellis@gems.gov.bc.ca

Project Summary

This project will accelerate the creation of digital maps of new forest road networks. This project will be beneficial to FRBC by:

10) Allowing easy and broad access to forest roads data, used for timber supply reviews, risk assessment, and deactivation.
11) Supporting FRBC decision making by allowing quick and easy access to mapping and related data on forest roads requiring deactivation.
12) Providing a standard format for the exchange of digital mapping data between government agencies, industry, and other stakeholders.

Status

New to this funding.

Project Details:

This project will accelerate the creation of digital maps of forest roads, including non-tenured roads The data will be stored in the Ministry's Resource-Based Data Warehouse, available to government agencies, industry, and other interested parties. Much of this information is currently unavailable, or is stored in a variety of locations and formats, including hardcopy maps and plans. This project will make forest roads data available form a single source.

Specifically the objectives of this project include:

- Incorporating data from a number of sources, including TRIM, FC1, Forest Atlas and Orthophotos into a single digital map for each forest district.;
- Storing the data in a central warehouse;
- Development of easy to use interfaces to support downloading the maps to government agencies, industry, and other users;

- Development of facilities to allow users to query and view forest road information via a web browser.

This project will rely on contracted resources administered from forest district offices to compile the roads data. MoF headquarters branches will provide quality assurance, infrastructure for data storage and distribution .

The infrastructure has been purchased and data structures have been developed for the creation and storage of the map data.. Reporting and queries have only been created on a demonstration basis.

Deliverables:

- Completed digital map tiles for each forest district, containing all forest roads, including Road Permit, Forest Service, and non-tenured roads.
- Query facilities and interface which would allow for the querying, displaying and downloading of roads mapping information.

Creation of the digital map tiles for forest roads data is estimated to cost approximately $10,000 per forest district, or $400,000.

Partners/Linkages:

Corporate Resources Data Warehouse, Ministry of Environment Lands and Parks, Forest Licensees

Consequence of Not Funding:

If this project is not funded then the deliverables will not be available for several years hence. Current pressures around data availability for forest development planning, environmental risk assessment, and certification will be hindered, and Provincial and industry credibility may be affected.

Timing Constraints:

Demand for complete, consolidated forest roads information has be high for several years. Deployment of an integrated forest roads information system will delayed until standardized mapping data is available. Immediate execution will consolidate effort and results.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
0	$75,000	$100,000	$100,000		$200,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL (revised)

Project #:

Project Name: **Biodiversity Database Upgrade**

Originator:

Peter Newroth
Royal British Columbia Museum
(250) 356-5008; FAX: (250) 387-5360
E-mail: Pnewroth@royalbcmuseum.bc.ca

Project Summary:

The Royal British Columbia Museum (RBCM) proposes a three-year Biodiversity Database Upgrade project to update and complete a provincial baseline database of northern British Columbia natural history collections records. FRBC funding would help prepare material and complete data entry, including new plant, terrestrial invertebrate and mammal records. This will link with natural history research, publications and new field collections planned during the next six years for *Living Landscapes* North, a new outreach program including public education and community involvement.

Status:

This RBCM project will continue and accelerate data capture and conversion for natural history specimen records, providing provincial baseline information. FRBC and Ministry of Environment, Lands and Parks, Conservation Data Centre (CDC), supported earlier database work (1996-1999). This Biodiversity Database Upgrade project dovetails with new RBCM initiatives concentrating on northern British Columbia, and is consistent with the provincial RBCM mandate to increase and diffuse natural history knowledge.

Project Details:

Background: RBCM earlier secured about $670,000 in FRBC funding through joint submissions with CDC, within their Data Capture and Conversion allocations. These funds mainly were used for collection data entry including plant, insect, mammal and freshwater fish specimens, supplementing development of the Oracle Object Database by RBCM. Priority was placed on records of rare and endangered species to assist CDC in its reports and publications.

RBCM plans to provide public access to its collections database through the WWW. However, substantial parts of the RBCM biological collections remain unidentified, need final preparation for storage or have associated data (now in paper records) incompletely entered in digital form. These deficiencies limit ready access to data about specimens and

their interpretation. Northern *Living Landscapes* projects will include field work to add new species records to the current very weak baseline record for northern regions.

Objectives: The Biodiversity Database Upgrade project proposes to supplement the modest RBCM resources available for biological data entry. It will concentrate on forest dependent groups and species at risk, and especially plants, insects and mammals. The product will be an enhanced environmental baseline inventory, available to all users at an early date.

Scope: For FY 2001-2002, data entry would concentrate on completion of existing records for northern British Columbia. *Living Landscapes* North addresses the Upper Fraser Basin in 2000-2002, the Peace River region in 2002-2004 and the North Coast in 2004-2006. Additional funding will be needed for FY 2002-2003 and FY 2003-2004 to begin new collections to fill gaps in northern records. While the added information will be of greatest value to the northern region, planning and research on a provincial and national level will be facilitated.

Clients: The resulting improved environmental database will add substantially to the limited baseline knowledge available now, improving inventory descriptions and ecosystem knowledge. This enlarged database will benefit planners and managers charged with enhancing environmental values, community groups and researchers.

Decision/Ministry objectives supported: Species records (especially those supported by preserved voucher specimens) are fundamental tools supporting FRBC Strategic Objectives to Enhance Environmental Values and Strengthen Sustainable Forest Management (Enhance Knowledge).

Outputs to date if continuing: Previous FRBC support facilitated identification of thousands of difficult specimens and data entry of many tens of thousands of new records. The RBCM database was estimated to be the source of about 20 % of CDC records of rare and endangered species.

Deliverables:

In FY 2001-2002, the first year of a three-year project, proposed FRBC funding will allow major additions to the RBCM entomology and mammal database, including:
- Complete data entry for about 20,000 insect collection records, using 6 university co-op students,
- Complete data entry for about 7,000 mammal collection records, using 2 university co-op students,
- Hiring a part-time database coordinator (graduate co-op) for timely incorporation of new entries.

Substantially larger amounts of FRBC funding are requested in FY 2002-2003 and FY 2003-2004. If this funding is available, the expanded project will:

- complete northern data entries for the insect collections, process substantial new collections from selected northern areas, and identify several thousand specimens using contracted experts.

- complete the balance of data entries for the RBCM Mammal Database and collect new specimens and information for selected priority areas in northern BC, and
- complete identifications, preparation and data entries for about 25,000 northern botany specimens, and permit some new collections and specimen processing.

Over the period 2001-2004, the extra resources are projected to substantially complete and make available the RBCM database for existing records of northern species in the mammal, terrestrial invertebrate and plant collections.

Partners/Linkages:

Biodiversity Database Upgrade principally links with RBCM, CDC/MELP and federal agencies, and will be supported by *Living Landscapes* North. RBCM partners in this northern project now include local communities and First Nations, University of Northern British Columbia, the federal Museum Assistance Program, Habitat Conservation Trust Fund, Muskwa-Kechika Trust Fund, Cariboo Forest Region and Northern Forest Products Association. Substantial funding has been committed for 2001-2002 and about 17 RBCM Natural History research projects are connected with *Living Landscapes* North.

RBCM also will provide the facilities and support (administrative, technical and curatorial) for the Database Upgrade.

Consequence of Not Funding:

This proposal requests funds to significantly improve the northern BC biodiversity database, accelerating ongoing RBCM and other externally supported efforts. If FRBC funding is not available, through lack of staff for processing and data entry, a large backlog of incomplete data records will remain unprocessed for many years. Much biodiversity inventory information will not be available for planning and research in a timely manner.

Timing Constraints:

News of project funding must be available several months before co-op hiring. It would be preferable if funding could bridge Fiscal Years (2001-2002), since co-op work terms usually begin in September 2001, January 2002 and May 2002.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	**Other**	**01-02**	**02-03**	**03-04**	
$670,000 (1996-99), plus related contributions to NH publications (est. $150,000)	Estimated $ 2,000,000 for RBCM database development, research and staff from 1995.	$100,000 FRBC	$325,000 FRBC	$325,000 FRBC	$750,000 FRBC

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #:
(FRBC will
assign)

Project Name: TRIM Watershed Atlas

Originators:

Name(s): R.S. Hawthorn
Organization: TWA Steering Committee/
BC Fisheries
Telephone & Fax: 387-9593, 356-1202
E-mail
Address:Stu.Hawthorn@gems3.gov.bc.ca

Project Summary

This cross-agency continuing project is generating an intelligent stream network and associated watershed boundary information from TRIM 1:20,000 data for the entire province of British Columbia. When completed, the TWA database will support: 1) a single, consistent and reproducible heights-of-land (HoL) data set, 2) a hydrologically sound surface and stream network model, and 3) links and dynamic spatial updates to application-specific attribute information and GIS datasets (e.g. the Fisheries 1:50,000 Watershed Atlas). This information will form an integrated dataset with the TRIM topographic base maps and the new Forest Cover inventory maps.

The HoL information is used both to define cadastral tenure and other administrative boundaries in British Columbia and for watershed boundary generation and analysis. Extension to "user-defined" watersheds (i.e. watersheds above any user-defined point along a stream) will permit automatic boundary delineation using TRIM elevation data as well as other hydrological modeling applications.

The "intelligent" stream network at a scale of 1:20,000 - where every stream segment knows its relationship to segments upstream and downstream and is fully feature coded - is essential for GIS analysis and presentation of aquatic information used in planning processes, for environmental monitoring and in land and resource management. Lack of this network is currently preventing cost-effective access to $95 million of fish and fish habitat data collected on the forest land base.

Additionally, the integration of TWA data with other mapping products (Fisheries 1:50,000 Watershed Atlas, MoF tenure mapping, etc.) will allow for complex links to user attribute data and, when TRIM II updates are added to the TWA database, existing linkage information will be updated.

Status

Version 0.0 of the HoL data set is being used by MOF, Resource Tenures and Engineering and meets their current business needs. Correcting identified data gaps and errors to create Version 1.0 will require reprocessing of the provincial coverage.

A connected stream network has been developed for the HoL database. Production-level export of this network for additional processing only became realistic in July 2000. A Working Group has been meeting to resolve issues around the final functionality needed for the TWA Stream Network, including issues around what technology can best meet what business needs.

Programs to add intelligence to the stream network (equivalent to that already existing in the 1:50,000 Watershed Atlas are 90% complete and undergoing testing. Approximately 10% of the province will be complete by the end of Fiscal 00-01.

BC Fisheries is currently using complex procedures to link its FRBC-funded 1:20,000 inventory data to the 1:50,000 Watershed Atlas. The cost of this on a per unit area basis is greater than the cost of building the TRIM Watershed Atlas.

Project Details:

Background – This project is creating the corporately-endorsed (both provincially and federally) map base for the geo-referencing of various aquatic resource-based attribute information including reconnaissance-level fish and fish-habitat data. The HoL component will form the basis for numerous administrative boundary applications (e.g. Forests, Parks and Crown Lands) and is the first time all agencies will have access to a common set of boundaries.

Objectives –

- to provide Heights-of-Land (HOL) linework at 1:20,000 for the province
- to recreate the existing 1:50,000 Watershed Atlas using 1:20,000 TRIM linework, including similar analytical capabilities, with full provincial coverage

Scope – province-wide; multi-agency

Clients – Ministry of Forests Resource Tenures and Engineering and Resources Inventory; the forest industry; MELP Habitat and Water Management; BC Fisheries; Fisheries and Oceans Canada; BC Hydro; First Nations; environmental organizations; certification agencies; contractors; community groups; and the general public.

Decision/Ministry objectives supported –

- one common source of administrative boundary information at 1:20,000
- a common aquatic base map with a connected stream network, linked to TRIM, for analysis and presentation at 1:20,000

Outputs to date –

- for HOL – preliminary version completed for province, re-processing to complete first accepted version underway
- for stream network - 90% of programs completed and tested, sample areas completed, 10% of province to be completed by end FY 00/01
- ongoing generation of 1:50K watershed codes as unique identifiers for !:20K Reconnaissance Fish and Fish Habitat inventory data; currently a backlog of 8,000

Deliverables:

1. Completion of Version 1.0 of the Heights-of-Land data set.
2. Completion of a fully functional, topologically-structured stream network using 1:20,000 TRIM linework containing unique identifiers for each feature.
3. As an interim measure, production of identifiers for those areas where TWA not yet available.

Partners/Linkages:

BC Fisheries – provides 1.5 salaried FTEs for project supervision plus operational funds for Stream Network database management

MELP/GCBC – creation and management of the production HoL database; creation of the initial single-line stream network.

MOF – specifications for and use of HoL product for tenure boundaries

DFO – use of the TWA as the Pacific Region standard aquatic base map at 1:20,000

Forest Industry – use of the TWA for Forest Practices Code riparian and stream classification; potential co-funder of Atlas creation

FRBC – parts of this project could be funded through the Regional Investment Plans in the future

Consequence of Not Funding:

- future tenure and other administrative boundaries will not have an accepted single data source to ensure accuracy and consistency
- a fully linked and feature coded GIS aquatic digital map base will not exist for analysis and presentation;
- $95 million of fish and fish habitat inventory data collected during the past 10 years, largely with FRBC funding, will not be fully accessible.

Timing Constraints:

This continuing project can proceed at different rates of progress depending on funding. A significant investment level is required to increase opportunities for generating private sector co-funding – e.g. from the forest industry or BC Hydro.

Past Investment and Proposed FRBC Budget:

Past Investment (to Mar. 31/01)		Proposed Budget			Total Proposed
FRBC	Other	01-02	02-03	03-04	
$2,500,000		$280,000	$1,185,000	$1,185,000	$2,650,000

These funding levels assume completion of the stream network in 3 years with no co-funding. It is anticipated partnerships will be established with the private sector to cost-share. Cost is estimated to be an average of $10,000 per watershed group for 246 watershed groups plus HoL.

Proposed Breakdown FY 01-02 ($280,000):

- TWA group processing - **$176,000** (18 groups – more if funding partnerships)
- Program maintenance/enhancement - **$25,000**
- Co-op salaries - **$59,000** – edit/process TWA groups (approximately 45) initiated in FY 00/01
- Interim identifier generation - **$20,000**

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN
PROJECT PROPOSAL

Project #: (FRBC will assign)

Project Name: WAP / CAP provincial database

Originators:

Name(s): Dave Gooding
Organization: Resource Inventory, MELP
Telephone: (250) 387-9480
E-mail: David.Gooding@GEMS7.gov.bc.ca
FAX: (250) 356-5496

Project Summary

Gather the results of the WRP and FPC Watershed Assessment Procedures (WAPs), Fish Habitat Assessment Procedures (FHAPs), and Channel Assessment Procedures (CAPs), with resulting recommendations for the FDP, and compile in a provincial database. This database can then be used for analysis of stream and watershed conditions through the province, and of how that condition relates to various aspects of activity in the basins. Results of the analysis can be used in FDP and TSR decision making, Fish Sustainability Planning, and in auditing resulting recommendations from the Watershed Assessment Committee (WAC).

Status

New- although some preliminary work has been done by MELP initiatives in one or two regions.

Project Details:

Background: Many assessment procedures (WAPs, FHAPs, CAPs, ReCAPs) have been performed in the last five years under both the Watershed Restoration Program (WRP), and as Forest Practices Code (FPC) requirements for Forest Development Plans. Unfortunately there is no one database containing the results of all of these assessments. They are in most cases only available in hardcopy at the local Forest District or on various personal bookshelves in MELP regional offices.

Objectives: The objectives of this project are to:

1) gather all available assessment information (both hard copy and digital data associated with WAPs, FHAPs, CAPs and ReCAPs);
2) develop and create a database and any associated forms/import tools (some data exists in EXCEL and ACCESS) required for data conversion;
3) input/import all the required data into the database;
4) link the database to established GIS systems such as GOAT, or Watersheds BC.
5) identify procedures for continued update/data entry.

Scope: Provincial

Clients: MOF, MELP, Federal and Provincial Fisheries, University research, environmental groups, water users, public

Decision/Ministry objectives supported: Gathering data to help enable sound environmentally sustainable decisions around fish habitat and water quality to be made in both TSR and FDP processes, and enable audit of the WAC/WAP process.

Deliverables:

Gathering reports and data sets, determining and beginning extraction of data fields to be stored, in-house investigation of database/GIS options: March 2002

Design of database and GIS linking, with associated forms/input tools, input of available data: March 2003

Final GIS database operational and complete, with procedures for data updating and entry: March 2004

Partners/Linkages:

BC Fisheries is a partner in this project. This project links to a number of different initiatives including Watersheds BC, the development of environmental baselines, and Fish Sustainability Planning.

Consequence of Not Funding:

The lack of a provincial database of WAP and CAP results makes it impossible to form any clear defendable picture of the overall condition of watersheds and stream channels in BC, or to attempt to analyze those results in order to form an understanding of patterns of watershed forest development in BC versus resulting channel condition. Without this understanding and overall picture MELP does not have the information to enable us to fulfill our mandate to protect the streams, water quality, and fish habitat of the province, and is unable to provide scientifically based analysis of the risk to the aquatic resource for MOF's TSR process.

Timing Constraints:

Timing of project initiation should coincide with timing of coop work terms

Past Investment and Proposed FRBC Budget:

Past Investment		Proposed Budget		
FRBC	**MELP**	**01-02**	**02-03**	**03-04**
	$5-10,000	$40,000	160,000	120,000

HEADQUARTERS RESOURCE MANAGEMENT PLAN

ENHANCING ENVIRONMENTAL VALUES

Watershed Restoration Component

The vision of this component is to:

1. Restore and protect fish habitat and water quality in high priority watersheds adversely affected by past forest harvesting practices that, without intervention, would require decades to recover naturally;
2. Provide better knowledge, information, and tools to strengthen sustainable management of watersheds; and
3. Provide community-based employment, training and stewardship opportunities.

The six key strategies for 2000 – 2005 as provided in the regional Resource Management Plans are:

- Focus first on water quality and fish habitat;
- Identification of key watersheds to guide investments;
- Maintain an integrated whole watershed approach;
- Encourage leverage or cost sharing with other initiatives to maximize investment and coordination;
- Make new knowledge and learning on watershed processes and management accessible to all; and
- Increase accountability and improve monitoring and effectiveness evaluation.

On an annual basis the HRMP is designed to provide important technical and applied scientific support towards effective achievement of the WRP vision and strategies. Watershed restoration is a relatively new and needed initiative in British Columbia, thus requiring technical and training support to be effective and efficient. Further the effectiveness of the forest practices Act (the Code) and the health of forested watersheds are co-dependent upon the effectiveness of the Code (for new forest harvesting) and the Watershed Restoration Program (for past logging impacts).

In the Watershed Restoration Program, the Ministry of Forests (MoF) has responsibility for hillslope rehabilitation and the Ministry of Environment, Lands, and Parks (MELP) for stream restoration, with overlapping responsibilities for restoration of riparian areas. It is recognized by both ministries and FRBC that all watershed components are physically and biologically interconnected, thus requiring an integrated watershed approach to maximize the benefits of the Program and to ensure delivery of the goals.

This component satisfies all of the eligibility criteria, performance targets and linkage requirements as follows.

1. This component will contribute to the restoration and protection of fish habitat and water quality by:

- Developing and refining guidelines, standards, processes and procedures,
- Encouraging innovation and learning through performance measurement of WRP projects, combined with adaptive management.

2. The WRP component complements and facilitates existing regional investments by:

- Facilitating and improving decision support for investments;
- Providing training, tools, and knowledge to assist ministry regional / district staff, industry proponents, and forest workers involved in operational implementation;
- Promoting the Watershed Restoration program through joint agency communications and public awareness initiatives.

3. This component relies on partnerships with Forest Renewal BC, the Ministry of Forests, the Ministry of Environment Lands and Parks, and industry proponents to make new knowledge and learning on watershed processes and management accessible to all.

4. The planning process is transparent and involves existing advisory groups such as Regional Watershed Co-ordinators, Technical Review and Evaluation Working Group (TREWG), and other appropriate watershed proponents.

WRP Effectiveness Evaluation Implementation

A key strategy towards achieving the watershed restoration program vision and goals is the monitoring and effectiveness evaluation of past and ongoing operational projects. Watershed Restoration proponents are responsible through their Multi-Year Agreements for implementing Routine Effectiveness Evaluations. Subject to agreement between the Agencies and watershed proponents, the ministries are prepared to take on the responsibility for the co-ordination and implementation of Intensive Effectiveness Evaluations and Operational Techniques Refinement. This is incremental to the Headquarters Resource Management Plan and is presented within for further consideration and discussion.

PROJECT TITLE: **BIOPHYSICAL DATABASE DESIGN/WEB PAGE**

Proposed Budget (including 12% admin. fee): **$10,864**

FRBC Activity Number: **718144**

Originators:

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Project Status: **Carried Over**

Project Priority: **Moderate (3)**

Project Significance: **Provincial**

Project Summary:

There is a re-emphasis in WRP on Effectiveness Evaluation (EE). As a result, there is a pressing need to establish protocols and a database for effectiveness evaluations of aquatic and riparian restoration projects. This project will provide updates and expansion of MELP's WRP web page, incorporating demonstration sites and feature projects, as well as innovative techniques.

FRBC Strategic Link:

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

The biophysical database will help to address this strategy by providing access to evaluation results and providing a mechanism for a feedback loop in the evaluation process.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

Stewardship groups will have access to information about WRP projects through the web site.

Relevance to Regions/Proponents:

Creation of standardized protocols for reporting EE results will make this information more accessible and useful for regional staff and proponents. Along with Streamline case reporting and WRP publications, this feedback arm of the EE exercise will be a very useful tool. The amassed results will be a crucial part of an adaptive management loop for EE – strongly supported by MOF.

As the EE process is being developed, regions and proponents will depend on tools like this database to stay appraised of methods and results. There is on-going frequent communication with regional staff/proponents about EE.

Project Linkages:

The Ministry of Forests has expressed very high interest in the adaptive management model of managing EE. This database provides one of the essential feedback loops for this management protocol.

This project is related to other EE projects in this HRMP, especially Routine EE.

Consequences of Non-Funding:

Without funding of this project there is risk of EE data being shelved rather than used.

Project Objectives:

1. standardized protocols and a matching data base
2. templates for use by MELP WRP staff and MYA contractors
3. web page refinement to include aquatic watershed restoration techniques.

Project Outputs 01/02:

1. methods protocols
2. database for effectiveness evaluations
3. useful web page

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
10,864	10,864	10,864

PROJECT TITLE:	**BC TECHNICAL ADVISORY TEAM**
Proposed Budget (including 12% admin. fee):	**$86,800**
FRBC Activity Number:	**718117**

Originators:

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Project Status: **Carried Over**

This project has been a crucial element in the development of WRP expertise throughout BC. It is decreasing in funding each year as local expertise grows.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

Aquatic restoration is relatively recent discipline in B.C., particularly for licensees, their consultants, stewardship groups and new ministry staff. Also, techniques change as innovations are developed, and on-site advice is often required, particularly in engineering and fluvial geomorphology. This project supports provision of specialized restoration expertise from the Technical Coordination Section where required to ensure successful project delivery and application of innovations and the latest restoration technology. Recent auditing experience confirms that the complexity and diverse nature of aquatic projects requires this input.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

This project supports technical expertise being applied at the operational level. There is a direct link between this project and the quality of work which FRBC invests in. Stewardship of forest resources is improved as a by-product.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

As the BC Technical Advisory Team travels the province working on regional projects, regional staff and consultants work with the team, gaining knowledge, experience and skills.

Relevance to Regions/Proponents:

The BC Advisory Team creates a format for decentralizing knowledge and skills required to carry out and assess WRP projects. It directly supports the ability of regional staff and proponents to complete projects.

There is on-going and frequent communication with regional staff about visits by the technical team.

Project Linkages:

There is currently no direct linkage with MOF on this project.

There is a link between this and FRBC Activity #718133 (USA-Canada Technical Exchange) as they both enable dissemination of existing knowledge and expertise.

Consequences of Non-Funding:

The quality of work done in regions will drop without this project. This project has been reduced in scope as more expertise is developed throughout the province, and is still required at the existing level.

Project Objectives:

1. provide technical advisory/mentoring services to regions
2. provide technical advisory/mentoring services to MYAs to ensure high success rates on aquatic restoration projects
3. advance restoration technologies province-wide

Projects Outputs 01/02:

12 field plans

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
86,800	86,800	86,800

PROJECT TITLE: **USA-CANADA TECHNICAL EXCHANGE**

Proposed Budget (including 12% admin. fee): **$28,409**

FRBC Activity Number: **718133**

Originators:

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Project Status: **Carried Over**

This project has been a crucial element in the development of WRP expertise throughout BC. It has decreased in funding by 70% as local expertise grows, and is maintained at base level to support an annual restoration conference and input on channel de-stabilization and function.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

Watershed restoration is a new and evolving practice in Western North America. The U.S. Forest Service has had a decade more experience and it is cost-efficient to take advantage of a wealth of experience, particularly with inexperienced staff and contractors in B.C. regions. At the same time B.C. has knowledge of benefit to U.S. practitioners, especially in off-channel habitat and nutrient replacement.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

This project supports technical knowledge exchange. This knowledge is applied by regional staff at the operational level. There is a direct link between this project and the quality of work which FRBC invests in, and it prevents redundancy in WRP.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

US Forest Service experts not only share knowledge at regularly scheduled WRP/USFS workshops, they travel the province working on regional projects. Regional staff and consultants work with the experts, gaining knowledge, experience and skills.

Relevance to Regions/Proponents:

Continued exchange of technical knowledge with USFS experts provides professional development for regional staff and selected consultants. This ensures that current knowledge is maintained in the regions.

There is on-going and frequent communication with regional staff about WRP/USFS workshops and visits by USFS experts.

Project Linkages:

MOF participates in the WRP/USFS technical exchange workshop. A greater understanding of watershed processes has been developed and shared between the 2 ministries and USFS experts.

There is a link between this and FRBC Activity #718117 (BC Technical Advisory Team) as they both enable dissemination of existing knowledge and expertise.

Consequences of Non-Funding:

The quality of work done in regions will drop without this project. This project has been reduced in scope as more expertise is developed throughout the province, and is still required at the existing level. Without this funding, projects funds and time may be wasted re-learning knowledge which exists within the USFS.

Projects Objectives:

1. ensure technological exchange between practitioners of watershed restoration in the US Forest Service and WRP
2. support of regional advisory trips
3. support of annual conference

Projects Outputs 01/02:

1. advisory input to project reviewers and supervisors (10 exchanges)
2. collated summary (provided annually)
3. conference proceedings (summarized in Streamline)

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
28,409	28,409	28,409

PROJECT TITLE: **PUBLICATION SERIES/COMPENDIUM**

Proposed Budget (including 12% admin. fee): **$91,555**

FRBC Activity Number: **718140**

Originators:

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Project Status: **Carried Over**

This project represents the on-going WRP Publication Series, widely read and well reviewed.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

A dynamic and advancing program requires a publication series to ensure that all practitioners are complying with best practices and that procedural guides are revised as needed. Since inception of the Watershed Restoration Program, 8 Management Reports, 12 Technical Circulars and 13 Project Reports have been published. Approximately 10,000 copies of WRP reports have been distributed to practitioners. The Annual Compendium is a technical communications tool that is essential for tracking/communicating accomplishments in MELP-WRP.

FRBC Strategic Link:

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

These publications provide direct and tangible progress towards meeting this FRBC strategic objective.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

WRP Publications are an excellent and well-used method for reaching local stakeholders with technical information.

Relevance to Regions/Proponents:

Publications and the Compendium are used extensively by regional staff and proponents. They are used for technical transfer, and are a tool for communicating regional achievements to the province and beyond. Compendium entries provide a venue for proponents to take credit for good works.

There is extensive on-going communication between Headquarters and regional staff about these reports and compendium submissions.

Project Linkages:

The Ministry of Forests publishes technical circulars, management and project reports in the WRP series. Some reports are produced jointly by the two ministries.

This project is supported by new FRBC Activity # (Publications/Compendium Coordination).

Consequences of Non-Funding:

Without the venue for sharing of knowledge which the WRP Publication Series provides, the FRBC investment in WRP projects would have only local relevance. With the publications series, the knowledge gained through each operational project can be shared with provincial, federal and global audiences.

Project Objectives:

1. maintain the WRP publications series from MELP and MOF of technical procedural guides and reports.
2. demonstrate the extent of the work being done in WRP, as well as provide key technical information

Project Outputs 01/02:

1. 7 reports
2. 2000/2001 Annual Compendium of WRP Aquatic Restoration Projects

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
91,555	91,555	91,555

PROJECT TITLE: **SLOW RELEASE FERTILIZER TESTING**

Proposed Budget (including 12% admin. fee): **$28,000**

FRBC Activity Number: **718108**

Originators:

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Project Status: **Carried Over**

This is the third year of development and second year of testing for these products. Additional funding was required due to need to shift to a new fertilizer producer (Lesco) after the original producer (Vigow) eliminated their new product development division. There also was a need to ensure environmentally-safe nutrient products.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

The use of slow release fertilizers to offset nutrient deficiency from depressed salmon carcasses and speed fish stock recovery resulting from habitat and hillslope rehabilitation is proving to be one the most effective and cost-efficient WRP methods. The previous supplier of slow-release fertilizers, developed with support of FRBC, terminated production. A new committed supplier was located that secured patented replacement products, each requiring re-testing for contaminants, release rates and, over the next three years, aquatic productivity response.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

Fertilization is proving to be one the most effective and cost-efficient WRP techniques (e.g. Keogh River).

Relevance to Regions/Proponents:

Fertilization is a technique which appeals to regional staff and proponents in areas where oligotrophication is an issue. It provides excellent “bang for the buck”, making it especially attractive for proponents.

Regional staff and proponents are kept appraised of developments in fertilization techniques and results through project reports and Streamline articles.

Project Linkages:

This project has no direct link to MOF. There is scientific support from the Ministry of Agriculture, Food and Fish and BC Hydro. The supporting projects include large-scale treatments with liquid fertilizer, including Kootenay Lake, Arrow Lake, Alouette Lake and Jones Lake to mitigate oligotrophication of reservoirs.

This project is not directly related to other WRP projects. It is indirectly linked to FRBC Activity #NA (EE Operational Testing) and FRBC Activity #718295 (Keogh Instream Evaluations) in that it is a method which is being and will be evaluated on the Keogh River and elsewhere.

Consequences of Non-Funding:

The premature ending of this project would mean that the efforts put into this method to date will have been largely wasted. This phase of testing represents the culmination of 4 years of product development. As a result, BC is the instrumental lead in this technology.

Project Objectives:

test slow-release fertilizers for aquatic use

Project Outputs 01/02:

WRP Project Report and test sites

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
28,000	28,000	28,000

PROJECT TITLE: **KEOGH INSTREAM EVALUATIONS**

Proposed Budget (including 12% admin. fee): **$78,682**

FRBC Activity Number: **718295**

Originators:

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Project Status: **Carried Over**

This project represents the 5th year of evaluation on the Keogh River and corresponding control river, the Waulkwass.

Project Priority: **High (2)**

icance: **Provincial**

ere is only a single watershed-level intensive evaluation of the ess of B.C.'s Watershed Restoration Program, the Keogh River. ion of this restoration project is co-funded (as counting fence funding) via HCTF and HR-SEP. FRBC funding is directed at in-river examination of effectiveness and support for maintaining monitoring of the external reference stream, the adjoining un-restored Waulkwaas River. Results are positive to date and so far confirm rapid recovery, as restoration nears completion in 01/02.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

This project directly addresses the investment strategy to restore damaged watersheds. The Keogh River is providing evidence that the FRBC investment in WRP is sound.

Relevance to Regions/Proponents:

The confirmation of restoration success in the Keogh River allows regional staff and proponents to have confidence in the projects which they are undertaking. Having the Keogh River EE results provides important backing when regional staff are discussing projects with other stakeholders.

Information about Keogh River EE results is disseminated to regional staff and proponents through project reports, Streamline articles and media coverage.

Project Linkages:

This project has no direct link to MOF. The Ministry of Agriculture, Food and Fish is involved in the project, as is Fisheries Renewal and Western Forest Products.

There is an indirect link to FRBC Activity #718108 (Slow Release Fertilizer Testing) as that fertilizer is one of the techniques being applied on the Keogh River.

Consequences of Non-Funding:

The Keogh River Evaluation is providing essential pilot data on the success and effectiveness on WRP instream techniques. This project represents the culmination of 4 years of evaluations, backed by over 20 years of earlier research data on the fish populations. That body of information, combined with the existence of the control Waulkwass River, makes this a keystone project for WRP. Recent extensive press coverage has brought positive attention to WRP throughout Canada. The project is important to Program credibility.

Project Objectives:

1. provide an annual evaluation of the effectiveness of instream structures, slow-release fertilization and off-channel rehabilitation
2. compare to an external reference or control watershed

Project Outputs 01/02:

1. annual WRP Project Report documenting progress and tracking indicators such as smolt output against restoration treatments
2. conference proceedings including summaries in Streamlines
3. response to continued media interest on the project

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
78,682	78,682	78,682

PROJECT TITLE:	**RIPARIAN/STREAMBANK/BAR TESTING**
Proposed Budget (including 12% admin. fee):	**$53,955**
FRBC Activity Number:	**NA**

Originators:

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Project Status: **New Project**

Recent examination of existing and potential projects shows that there is a need for more testing of riparian, streambank and bar restoration. There is not yet a collection of accepted and assessed techniques for the more de-stabilized stream channels (about 50% of aquatic impacts).

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

WRP Technical Circulars 5, 6 and 9 provide guidance on assessing riparian and streambank conditions and prescribing appropriate restorative treatments. The methods need to be field-tested to ensure the procedures are effective in restoring functional components of de-stabilized channels. To this end, sample of treatments need to be monitored as to success rate.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

The techniques tested under this project will directly apply to this FRBC investment strategy.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Data collected as part of this field-testing project will be used to refine and improve existing techniques.

Relevance to Regions/Proponents:

Regional staff and proponents will be able to apply the knowledge gained through this project to their projects.

Regional staff have been contacted about his project via e-mail. Solicited feedback has been supportive.

Project Linkages:

MOF is not currently directly involved in this project.

This project does not directly relate to any other projects, but it plays a role in the holistic goals of EE and operational projects.

Consequences of Non-Funding:

Riparian restoration is lagging behind other techniques in both technical knowledge and proponent buy-in. Providing information about and assessment of these techniques will aid in supporting decisions to do this work. Streambank and bar stabilization techniques are still in the development phase. A lack of funding for the regional testing of these techniques will result in project failures (confirmed by audit in 00/01).

Project Objectives:

refinement of riparian, streambank and bar stablization procedures for assessments and prescriptions

Project Outputs:

1. improved guidelines for riparian, streambank and bar assessments and prescriptions
2. report(s) in Streamline
3. WRP project report(s)

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
53,955	53,955	53,955

PROJECT TITLE: **INTEGRATED WATERSHED EVALUATIONS**

Proposed Budget (including 12% admin. fee): **$46,205**

FRBC Activity Number: **718116**

Originators:

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Project Status: **Carried Over**

This is year two of a multi-year pilot monitoring project which commenced in 99/00.

Project Priority: **High (2)**

Project Significance: **Provincial**

Project Summary:

Intensive monitoring of WRP projects at a watershed level has been extremely limited, resulting in criticism of the Program and FRBC. The Big Silver watershed typifies steeper coastal watersheds and provides for water quality and bedload monitoring related to hillslope rehabilitation at Hornet Creek compared to a similar untreated control, Clear Creek. There will also be monitoring of the effectiveness of extensive fish habitat restoration (in cooperation with Interfor, and possibly MOF-VFR-slopes) before and after treatment. An earlier 5-year database of fish abundance (chinook, sockeye, coho, steelhead) provides statistical rigor.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-Project Priority watersheds.

The information gathered in this pilot project will be applied to EE projects throughout the province. The quality of future WRP projects will improve as a result of EE.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Results of this project will be communicated to other WRP proponents for their use.

Relevance to Regions/Proponents:

Results of this project will assist regional staff and/or proponents in planning and carrying out monitoring projects.

Regional staff have been communicated with about this project on conference calls and via e-mail.

Project Linkages:

Although MOF is seeking input, there is no direct link with MOF on this project at this time. Two licensees (Interfor and WFP) are involved in projects and Interfor is contracted for water quality sampling in the projects.

This project is indirectly linked to FRBC Activity #NAs (WRP Effectiveness Evaluations Coordination and EE Operational Testing) in that the EE coordinator will directly oversee this project and EE Operational Testing will be related pilot projects.

Consequences of Non-Funding:

Preliminary data has been collected and will go to waste if this project is not funded. EE will play an increasingly large role in WRP in the years to come and pilot projects such as this one are required to ensure these projects are effective.

Project Objectives:

provide continuing monitoring at a watershed level of the effectiveness of restoration at Big Silver Creek and key tributary Hornet Creek, a steep coastal watershed.

Projects Outputs:

1. annual progress report on collected data
2. WRP project reports every 2 years

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
46,205	46,205	46,205

PROJECT TITLE: **INTENSIVE EFFECTIVENESS EVALUATION: OPERATIONAL TESTING/ STANDARDS/TRAINING**

Proposed Budget (including 12% admin. fee): **$100,000**

FRBC Activity Number: **NA**

Originators:

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Project Status: **New Projects**

Project Priority: **Moderate (3)**

Project Significance: **Provincial**

Project Summary:

In this sixth year of FRBC investment in WRP, evaluation of the effectiveness of projects has become a high priority for FRBC. A framework for WRP project Effectiveness Evaluations (EE) has been developed and presented at a workshop in 1999. Headquarters will have a demonstration/pilot evaluation site and develop standards, training and related materials for the protocol.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-priority watersheds.

Intensive EE projects will be a crucial step in ensuring that the FRBC investment in WRP operational projects is effective and efficient. They are a crucial step in the evolution of WRP.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Under this model, part of the EE funding will be directed towards ensuring that regional staff and proponents will have the training and materials necessary to carry the work out at a high level.

Relevance to Regions/Proponents:

Intensive EE (IEE) will be carried out in all regions. This project will provide the planning and operational tools required to manage and carry out this work.

Regional staff have been involved in discussions regarding this work and the tools required to carry it out successfully. Proponents are in discussion with FRBC regarding these projects.

Project Linkages:

MOF and MELP are working closely on IEE initiatives and will continue to do so.

Consequence of Non-Funding:

If the funding for IEE training and standards is not provided, there will be a lack of consistancy and expertise to carry these important projects out.

Project Objectives:

1. evaluate selected existing pilot WRP project in detail for effectiveness on a biological, physical and ecological basis.
2. develop standards for IEEs.
3. develop and deliver training and related materials to ensure best practices.

Project Outputs:

1. 1 demonstration IEE site
2. development of IEE standards
3. development of 1 training course for IEE practitioners
4. development of training and reference materials for IEE practitioners

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
100,000	100,000	100,000

PROJECT TITLE: **WRP TECHNICAL BULLETIN "STREAMLINE"**

Proposed Budget (including 12% admin. fee): **$55,800**

FRBC Activity Number: **718115**

Originators:

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Project Status: **Carried Over**

The production of this Bulletin has been on-going since Winter of 1996.

Project Priority: **High (2)**

Project Significance: **Provincial**

Project Summary:

Watershed restoration is a relatively new resource science that is developing and advancing rapidly in North America. WRP requires an interdisciplinary communication tool for the rapid dissemination of information in short articles and reviews. New techniques and innovations need to be captured. Procedures evolve rapidly and standard methods are widely applied, thus requiring ready access to information and expertise. Results of monitoring projects are widely distributed for reference by practitioners. Streamline has been providing these functions since the winter of 1996/1997 and has a print run of 3,000 per issue.

FRBC Strategic Link:

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Streamline was developed specifically to address this investment strategy.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

Streamline is readily available to local stewardship groups and provides them with important information for their restoration projects.

Relevance to Regions/Proponents:

Streamline is a crucial part of the communication between Headquarters, regions and proponents. It reviews projects throughout BC and beyond and is distributed to over 2,500 addresses.

There is steady communication between Headquarters and regions regarding upcoming Streamline articles. Regions give Headquarters feedback on articles.

Project Linkages:

MOF co-funds Streamline and contributes to the content.

Streamline is not directly linked to other projects.

Consequences of Non-Funding:

Without funding Streamline would cease to be produced and WRP would lose an essential technical communication tool.

Project Objectives:

1. communicate new findings and standardized procedures to WRP practitioners and other interested parties in a timely and organized scientific manner
2. provide a quarterly technical bulletin for describing technical innovations, demonstration sites, new assessment, prescription, restoration and evaluation procedures, and project results in WRP
3. provide a cost-effective mechanism for correcting/improving on practices that field evaluations indicate are limited in achieving objectives
4. serve as communications tool for WRP special notices, workshops, meetings, conferences and seminars

Project Outputs:

1. 4 issues/year
2. 3,000 copies/issue
3. plan to add access via web site to reduce publication costs.

Three-Year Funding Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
55,800	55,800	55,800

PROJECT TITLE:	**TRAINING DEVELOPMENT/REVISION**
Proposed Budget (including 12% admin. fee):	**$24,477**
FRBC Activity Number:	**718119**

Originators:

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Project Status: **Carried Over**

The development and revision of training courses has been part of the WRP mandate from its inception.

Project Priority: **High (2)**

Project Significance: **Provincial**

Project Summary:

The development and delivery of training workshops province-wide ensures that well-trained professional, technical and operational staff employed in watershed restoration projects are using standardized, approved methods for assessments, prescriptions, restorations and evaluation. Field-oriented workshops are an effective tool in providing training for forestry and fisheries staff. There are several existing courses which require on-going revision to ensure that they are current and appropriate. New courses are being developed in culvert assessment, effectiveness monitoring and bank/bar stabilization.

FRBC Strategic Link:

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Courses are designed to specifically address this investment strategy.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

Training courses and workshops are available to local stewardship groups.

Relevance to Regions/Proponents:

Training courses address the need for training of personnel involved with regional projects.

Regions are consulted frequently about the need for training.

Project Linkages:

MOF and MELP have collaborated on courses and will continue to do so when appropriate.

This project is linked to FRBC Activity #NA (Riparian/Streambank/Bar Testing) in that a new course on restoration of those components is pending.

Consequences of Non-Funding:

Without this budget item, new courses would not be able to be developed (aside from those identified in other projects) and existing courses would quickly become obsolete.

Project Objectives:

1. provide, as demanded, province-wide delivery of field-oriented workshops in assessment, prescription and restoration techniques
2. develop and deliver new courses as required. Suggested topics include culvert assessment, effectiveness monitoring and bank/bar stabilization
3. revise and update existing course materials and content as required by increased knowledge, changing goals, and/or new audiences

Project Outputs:

1. 10-20 training sessions, as demanded
2. estimated 350+ person-days trained

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
24,477	24,477	24,477

PROJECT TITLE: DEMONSTRATION/TRAINING/EVALUATION SITE DEVT.

Proposed Budget (including 12% admin. fee): $66,818

FRBC Activity Number: 718135

Originators:

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Project Status: Carried Over

Several sites have been developed. Two regions still need a demonstration site, and existing sites require maintenance.

Project Priority: Very High (1)

Project Significance: Provincial

Project Summary:

The most powerful training and communication tools available to WRP are hands-on experience and demonstration of works. Demonstration Sites provide a forum for workers to observe watershed restoration in action and learn from the experience. These sites provide an arena for training exercises and demonstrate to professionals, project leaders, forest workers and community groups the myriad of techniques which may be applicable to that region. Evaluations, conducted at most of these sites, provide an essential mechanism for supporting reporting of restoration successes. HRMP funding is required to ensure that a wide array of restoration techniques are used at each demonstration site – beyond that which would be made available on a target watershed.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-priority watersheds.

These demonstration sites are high-priority projects and are getting state-of-the-art restoration.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Hands-on experience is one of the best methods for improving knowledge and understanding.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

Demonstration sites are excellent places for stewardship groups to gain knowledge about restoration projects.

Relevance to Regions/Proponents:

These sites demonstrate some of the best work that each region has to offer. They also provide a place for newer practitioners to view successful projects.

Regional sites have all been developed in close conjunction with regional staff and have often had input andsupport of proponents.

Project Linkages:

There is one demonstration site (Kingfisher/Cooke) which demonstrates techniques used by both MOF and MELP. Signs and a brochure have been developed cooperatively. Some future EE demonstration projects will be co-managed.

This project is linked to other training projects in that training courses are often offered at these demonstration sites.

Consequences of Non-Funding:

Lack of funding would mean that there would be no site in Skeena, Cariboo and Kootenay regions. These regions all need a place to demonstrate best practices.

Project Objectives:

1. continue to maintain and upgrade existing demonstration sites near Squamish, Chilliwack, Port Hardy, Kelowna, Salmon Arm and Prince George
2. work to establish demonstration sites in Cariboo, Skeena and Kootenays
3. evaluate restoration success at selected site(s) using intensive effectiveness evaluations
4. produce interpretive signs and brochures as appropriate for selected demonstration sites and projects

Project Outputs:

1. 3 new demonstration sites (Skeena, West Kootenay, East Kootenay)
2. maintenance of 6 existing demonstration sites
3. development of selected additional demonstration projects

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
66,818	66,818	66,818

PROJECT TITLE: TECHNICAL COMMUNICATIONS

Proposed Budget (including 12% admin. fee): **$44,091**

FRBC Activity Number: **718139**

Originators:

Pat Slaney
Ph 604-222-6761/Fax 604-660-1849
Pat.Slaney@gems5.gov.bc.ca

Heather Deal
Ph 604-222-6768/Fax 604-660-1849
Heather.Deal@gems1.gov.bc.ca

Project Status: **Carried Over**

The project was initiated in 00/01 as FRBC increased emphasis on communication of technical restoration information.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

The Watershed Restoration Program produces projects that appear natural and thus are not readily identifiable by the public. Many projects are not visible to the public. Therefore, concerted effort at public awareness through technical communication is necessary to assure support for FRBC and the Program. WRP provides technical communications materials and locates them to ensure public awareness and interpretative benefits to support the Program. These materials include interpretative signs, descriptive brochures, tour pamphlets, Program display booth and special projects (e.g. Vancouver Aquarium Forest Headwaters).

FRBC Strategic Link:

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Technical Communications tools such as project brochures and interpretive signs are an excellent way of imparting technical information to non-technical audiences.

Promote stewardship through watershed restoration by sharing new watershed restoration information and tools with local stewardship groups.

WRP technical communications are designed to make potentially daunting information and concepts accessible to stewardship groups, among others.

Relevance to Regions/Proponents:

Regions are using communications design templates for locally-produced tools such as signs and brochures. Brochures and signs describe regional projects, some of which are also demonstration sites.

Communication issues are discussed with regional staff on each conference call and other times as appropriate.

Project Linkages:

Several communications initiatives have been linked with MOF and some new projects will be linked. These initiatives include a program-wide brochure, signs and a brochure for a joint demonstration site, and interpretive material for the Forest Headwaters display at the Vancouver Aquarium.

This project is directly linked to FRBC Activity #718135 (Demonstration/Training/Evaluation Site Development). Interpretive signs and brochures are being developed for the demonstration sites.

Consequences of Non-Funding:

Without this funding, WRP would not be able to fulfil the FRBC push towards communication about the technical aspects of WRP projects. That, in turn, would lead to a drop in awareness of these projects. That lack of awareness might lead to a lack of support for the Program and FRBC.

Project Objectives:

1. deliver communications tools as required (e.g. consistent and professional brochures and interpretive signs)
2. develop new communications efforts (e.g. posters, bookmarks)
3. revise existing communications tools (e.g. Streamline, web page, information booth for conferences)
4. provide materials for special communications events (e.g. tours by public, media and government officials, Aquarium display)

Project Outputs:

1. interpretive signs created and installed at 2-4 demonstration sites
2. informative brochures created, printed, and existing brochures re-printed
3. template for program and projects posters developed
4. display booth materials revised
5. materials developed for web site as required

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
44,091	44,091	44,091

PROJECT TITLE:	**TRAINING/MENTORING IN AQUATIC REHABILITATION PROCEDURES**
Proposed Budget (including 12% admin. fee):	**$51,317**
FRBC Activity Number:	**718131**

Originators:

Pat Slaney	Heather Deal
Ph 604-222-6761/Fax 604-660-1849	Ph 604-222-6768/Fax 604-660-1849
Pat.Slaney@gems5.gov.bc.ca	Heather.Deal@gems1.gov.bc.ca

Project Status: **Carried Over**

This project was initiated as restoration techniques have been developed and tested. There is still a strong need for training in aquatic rehabilitation techniques, confirmed by the 00/01 performance review/audit.

Project Priority: **Very High (1)**

Project Significance: **Provincial**

Project Summary:

The focus of WRP has shifted from the assessments required early in the Program to the rehabilitation work itself. The techniques used for aquatic rehabilitation are complex and often upgraded. Advanced training courses and materials are required to keep the practitioners doing this work up to speed to ensure good investments. In addition, some assessment techniques are being upgraded, requiring course revisions (i.e. Fish Habitat Assessments) or new course development (i.e. Culvert Assessments). Appropriate training and information also helps to ensure the quality of the work done around the Province.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-priority watersheds.

Training is required to ensure that this FRBC Investment Strategy is satisfied adequately.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

This training initiative directly addresses the need for learning and knowledge in the area of restoration techniques.

Relevance to Regions/Proponents:

A primary goal of this project is to ensure that regional staff and proponents are well-trained in the theory and practice of WRP techniques. These techniques are constantly being reformed and training must reflect these updates.

There is on-going communication between headquarters and regional staff about training needs in their region and how to best address them. Re-emphasis on mentoring has been requested owing to effectiveness.

Project Linkages:

There are currently no direct links with MOF on training courses covered under this project. There are plans for linkages as a new course is developed for culverts in 01/02.

Consequences of Non-Funding:

Without this funding, proper techniques will not be taught around the Province. That would lead to poor projects and a greatly increased likelihood of project failure.

Project Objectives:

1. continual upgrading of content and materials for advanced training courses in In-Stream Structures and Off-Channel Habitat
2. development of new advanced courses in Culvert Assessments, Effectiveness Monitoring and, potentially, Bank/Bar Stabilization
3. address need for quality assurance through process for assessing knowledge and skills of practitioners throughout Province

Project Outputs:

1. estimated 100-300 person-days of training
2. new course materials as necessary
3. revision of existing materials as necessary

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
51,317	51,317	51,317

PROJECT TITLE:	**INTENSIVE EFFECTIVENESS EVALUATION: REGIONAL PILOT PROJECTS**
Proposed Budget (including 12% admin. fee): ($50,000/region X 7 regions)	**$350,000**
FRBC Activity Number:	**NA**

Originators:

Pat Slaney	Heather Deal
Ph 604-222-6761/Fax 604-660-1849	Ph 604-222-6768/Fax 604-660-1849
Pat.Slaney@gems5.gov.bc.ca	Heather.Deal@gems1.gov.bc.ca

Project Status:	**New Projects**
Project Priority:	**Moderate (3)**
Project Significance:	**Provincial**

Project Summary:

In this sixth year of FRBC investment in WRP, evaluation of the effectiveness of projects has become a high priority for FRBC. A framework for WRP project Effectiveness Evaluations (EE) has been developed and presented at a workshop in 1999. FRBC has recommended an allotment of 5% of the total WRP budget for EE activities. Based on the recommendations in the EE framework, 2% will go to intensive and operational testing evaluations, with 1% dedicated to aquatic projects.

This project represents proposed regional pilot projects should that funding be managed by the Ministries. This is the preferred model for delivery because of potential conflicts of interest by MYA's and lack of continuity of interest by licensees.

Intensive evaluation will look at selected sites in detail following a protocol currently under development. A pilot site will be proposed in each region and the project given to the regional staff to manage once the site is chosen and proposal reviewed by TREWG. Headquarters will have a demonstration evaluation site and develop training and related materials for the protocol in a related project.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-priority watersheds.

These intensive EE projects will be a crucial step in ensuring that the FRBC investment in WRP operational projects is effective and efficient. They are a crucial step in the evolution of WRP.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Under this model, part of the EE funding will be directed (in this and related project) towards ensuring that regional staff and proponents will have the training and materials necessary to carry the work out at a high level.

Relevance to Regions/Proponents:

Intensive EE (IEE) will be carried out in all regions. These proposed projects will provide the planning and operational tools and funding required to manage and carry out this work.

Regional staff have been involved in discussions regarding this work and the time and infrastructure required to carry it out successfully. Proponents/MYA's are in discussion with FRBC regarding responsibility for managing EE projects, and initial discussions indicate little or no interest beyond routine evaluation of a short-term nature.

Project Linkages:

MOF and MELP are working closely on IEE initiatives and would continue to do so if the agencies are managing these projects.

Consequence of Non-Funding:

If the funding for IEE is left in the hands of the proponents, there will be a lack of coordination and expertise to carry these important projects out. The funding is already in place for IEE, and it will be best managed from within the agencies. FRBC's limited record on intensive monitoring is risking Program credibility.

Project Objectives:

4. evaluate selected existing WRP projects in detail for effectiveness on a biological, physical and ecological basis.
5. develop pilot sites for this evaluation process, regional and headquarters.
6. develop and deliver training and related materials to ensure best practices.
7. support regional staff in choice and execution of IEE projects.

Project Outputs:

5. initiation of 8 headquarters and regional pilot IEE sites.
6. 1 demonstration IEE site.
7. development of 1 training course for IEE practitioner.
8. development of training and reference materials for IEE practitioners.

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
350,000	350,000	350,000

PROJECT TITLE:	**ROUTINE EFFECTIVENESS EVALUATION**
Proposed Budget (including 12% admin. fee): **(appx. 1.5% of WRP total investment)**	**up to $675,000**
Operational Testing:	**$50,000**
Training:	**$65,000**
Regional Projects: **($80,000/region X 7 regions)**	**$560,000**

IT IS RECOMMENDED THAT THIS FUNDING BE PLACED IN THE SERVICE AGREEMENT.

FRBC Activity Number: **NA**

Originators:

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Pat.Slaney@gems5.gov.bc.ca	Heather.Deal@gems1.gov.bc.ca

Project Status: **New Projects**

Project Priority: **Moderate (3)**

Project Significance: **Provincial**

Project Summary:

In this sixth year of FRBC investment in WRP, evaluation of the effectiveness of projects, and therefore the program, has become a high priority for FRBC. A framework for WRP project Effectiveness Evaluations (EE) has been developed and presented at a workshop. FRBC has recommended an allotment of 5% of the total WRP budget for EE activities. Based on the recommendations in the EE framework, 3% will go to routine evaluations, with 1.5% dedicated to aquatic projects. This represents proposed projects should that funding be managed by the Ministries.

Routine Effectiveness Evaluation (REE) will look at all projects sites in limited detail following a protocol currently under development. Sites will be evaluated in each region. Headquarters are testing protocols in 00/01 and will develop training and related materials.

FRBC Strategic Link:

Invest in the protection and restoration of damaged or threatened high-priority watersheds.

These routine EE projects will be a crucial step in ensuring that the FRBC investment in WRP operational projects is effective and efficient. This project will provide the funding for all WRP/MELP REE in BC.

Advance new learning and improve knowledge of watershed ecology and restoration techniques.

Under this model, part of the REE funding will be directed towards ensuring that regional staff and proponents will have the training and materials necessary to carry the work out at a high level.

Relevance to Regions/Proponents:

Routine EE (REE) will be carried out in all regions. These proposed projects will provide the planning and operational tools and funding required to manage and carry out this work, as well as then funding for the work itself.

Regional staff have been involved in discussions regarding this work and the time and infrastructure required to carry it out successfully. Proponents/MYA's are in discussion with FRBC regarding responsibility for managing these projects.

Project Linkages:

MOF and MELP are working closely on REE initiatives and would continue to do so if the agencies are managing these projects.

Consequence of Non-Funding:

The funding is already in place for REE, and it could be managed by MELP or the proponents. Under this model, MELP would manage all provincial REE's.

Project Objectives:

1. observe all existing WRP projects carefully for effectiveness on a biological, physical and ecological basis.
2. develop methods and reporting formats for this evaluation process, regional and headquarters.
3. develop and deliver training and related materials to ensure best practices.
4. support regional staff in execution of REE projects.

Project Outputs:

1. REE's throughout the Province
2. development of training and reference materials for REE practitioners

Three-Year Projection:

Proposed Budget		
01-02	**02-03**	**03-04**
675,000	675,000	675,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Best Management Practices Handbook**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445
Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

This project is completion of the "*Best Management Practices Handbook: Hillslope Restoration in British Columbia.*" The project will also include publication and distribution of the handbook for use by MYA agencies, FRBC, MoF, MELP, consultants, and learning institutions.

Status

This is a continuing project.

Project Details:

FRBC funded the "draft stage" preparation of a technical handbook called "Best Management Practices Handbook: Hillslope Restoration in British Columbia" during the 2000-2001 fiscal year. The handbook, in its current draft state, is a compilation of techniques that have been used successfully for hillslope restoration in British Columbia. The purpose of the handbook is to provide "state-of-the-art" knowledge in rehabilitation treatments such as road deactivation, landslide rehabilitation, gully rehabilitation, and bioengineering.

The draft handbook currently replaces the WRP Technical Circular No. 3 (dated July 1994) called "Resource Road Rehabilitation Handbook: Planning and Implementation Guidelines (Interim Methods)." It was issued as a working draft in May 2000 to selected government and industry representatives for the purpose of soliciting their review comments on the technical content of the handbook. Constructive comments, received from government agencies and forest industry will be used to update the content, and produce a final version of the BMP Handbook. Publication and distribution of the final handbook will be carried out prior to the start of the 2001-2002 field season. The document is considered a "living" document, and we expect that additional funding will be required in subsequent years to incorporate new technical information into the handbook as part of the adaptive management process.

Deliverables:

The deliverable is the production of a final version of the "*Best Management Practices Handbook: Hillslope Restoration in British Columbia*" for use by WRP practitioners during the 2001-2002 field season. Additionally, 1000 copies of the document will be published and distributed to targeted groups throughout all MoF regions of the province. The document will also be posted on the MoF's website.

Partners/Linkages:

Partners include WRP practitioners working in government and the private sector. The completion of this handbook is necessary for the effective and efficient delivery of WRP hillslope projects by MYA delivery agents, consultants and government agencies.

Consequence of Not Funding:

The current draft version of the handbook contains some technical and process related errors that must be addressed prior to finalization of the handbook. Project quality, efficiency of works implementation, and techniques effectiveness of WRP projects will be negatively impacted if this handbook is not completed and widely distributed to practitioners.

Timing Constraints:

This project must be completed prior to the start of the 2001-2002 field season.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	**Other**	**01-02**	**02-03**	**03-04**
80,000		39,000	10,000	

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **WRP Conference and Short Course (MOF & MELP)**

Originators:

Names: Brendan Holden / John Mallett	Organization: Ministry of Forests
Telephone 387-6565 & Fax: 387-6445	E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

This project is a yearly Provincial Watershed Restoration Conference and Short Course. The conference will alternate between regions and feature both coastal and interior restoration presentations and the short course will be a current topic in watershed restoration.

Status

Continuing project but reduced form two per year to one per year.

Project Details:

Since the inception of WRP, there have been two WRP workshops each year: one coastal and one interior. A short course has been added in the last two years. It is proposed that the two annual Watershed Restoration Conferences and adjacent short courses continue each year to facilitate information exchange and training in watershed restoration activities. The adjacent one day short course is to be a timely topic in restoration. A second one day course is feasible if there is sufficient interest. Since WRP is an evolving program, there is a need to facilitate information exchange and training between restoration practitioners in B C and the USFS. The Conference and Short Course will be organized by a partnership team of watershed restoration professionals and the Forestry Continuing Studies Network.

Deliverables:

Two annual Provincial Watershed Restoration Conferences and adjacent one day Short Courses.

Partners/Linkages:

MOF, MELP, FRBC and Industry.

Consequence of Not Funding:

No Conference and hence loss of the opportunity for information exchange and training.

Timing Constraints:

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
50,000		50,000	50,000	50,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Technical Review and Information Meetings**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445

Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

This is funding for technical meetings of TREWG and other watershed restoration professionals as required.

Status

Continuing project with more meetings expected on Effectiveness Evaluation.

Project Details:

This funding involves the Technical Review and Evaluation Working Group (TREWG) (MOF & MELP) and other restoration professionals (WRP Coordinators) as required from time to time. TREWG and other professionals meet several times a year to review and discuss the technical content of WRP activities and decide on the direction and merit of various aspects of WRP. TREWG is required because restoration procedures are relatively new and technical matters involve new, untried ideas and is expected to meet more often now to address Effectiveness Evaluation issues. Watershed restoration professionals must be kept updated on techniques and watershed restoration information. within B C and with the U S Forest Service.

Deliverables:

Meeting of TREWG and other watershed restoration professionals four to six times per year.

Partners/Linkages:

Watershed restoration professionals are from MELP, MOF, industry and FRBC.

Consequence of Not Funding:

Less meetings of restoration professionals will mean a lack of professional direction for WRP.

Timing Constraints:

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
15,000		35,000	35,000	35,000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Adaptive Management Process (Phase 2) for WRP Effectiveness Evaluation of Hillslope Projects**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445
Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

Funding is required to complete a WRP adaptive management framework for practical application to Routine, Intensive, and Operational Techniques Evaluations for hillslope restoration projects across the province. Funding in subsequent years will be required to adapt the framework to instream restoration projects.

Status

This is a continuing project.

Project Details:

FRBC is presently funding the implementation of Phase 1 (Preliminary Design) of a WRP Adaptive Management framework during the 2000-2001 fiscal year. The Phase 1 stage is currently in process, and major project deliverables will include the facilitation of a technical workshop to establish the scope, and operational constraints and parameters, of an adaptive management framework that could be implemented by MYA delivery agents and government agencies. Phase 1 deliverables also include the preparation of a follow-up report to summarize the feedback provided by workshop participants, and to develop the preliminary framework for an Adaptive Management Plan.

Phase 2 of the project would commence in the 2001-2002 fiscal year, and will involve activities as are recommended by the final report of Phase I to complete the Adaptive Management Plan.

Deliverables:

The major Phase 2 deliverable would be a complete, rigorous, but practical WRP Adaptive Management Plan specifically designed for the WRP hillslope component projects, and will be an integral component of the Routine Effectiveness Evaluation process, and the Intensive Evaluation and Operational Techniques Refinement standard operating procedure. Another major deliverable would be a comprehensive Implementation Plan to ensure successful execution of the Adaptive Management Plan.

Partners/Linkages:

Partners include WRP practitioners working in government and the private sector, FRBC, MoF, and MELP. This project is inexorably linked to the proposed Routine Effectiveness Evaluation

Process project, and to the proposed Intensive Evaluation and Operational Techniques Refinement Standard Operating Procedure project.

Consequence of Not Funding:

A disciplined, rigorous but practical process is required to communicate and pass-on information to those decision makers involved in managing the WRP. Data analysis, interpretation, and reporting on the effectiveness of restoration works must be carried out to test, refine and improve restoration techniques and processes. Without an adaptive management process, MYA holders, FRBC, MoF and MELP will not be able to make necessary adjustments to WRP processes, practices, and techniques based on new understanding and knowledge gained through on-the-ground project experience.

Timing Constraints:

This project should be completed in the 2001-2002 fiscal year.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
60,000		70,000		

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Routine Effectiveness Evaluation Process for Application by MYA Delivery Agents**

Originators:

Name:	Glenn Moore, P.Eng.	Organization: RTEB, Victoria
Telephone:	387-8331	E-mail Address: Glenn.Moore@gems2.gov.bc.ca
Fax:	387-8624	

Project Summary:

This project will provide a "blueprint" for MYA delivery agents to help fill the current gaps in FRBC's program of WRP evaluation. It involves the development of a comprehensive WRP Standards Agreement (Schedule A) that will provide a process for MYA delivery agents to implement a low cost, low intensity and qualitative Routine Effectiveness Evaluation program on all their WRP projects.

Status:

This is a new project.

Project Details:

Background

Innovation and learning through Effectiveness Evaluation of WRP projects, will be accomplished through the Adaptive Management process. This process is essential for responsible and accountable management of the Watershed Restoration Program (WRP). In the past, WRP projects have been evaluated informally, on an ad-hoc basis, or not at all *(Auditor General of British Columbia, 1999/2000 Report 6: Forest Renewal BC)*. Where effectiveness evaluation is carried out, the results of effectiveness evaluation efforts are not incorporated into a well-defined process of adaptive management for subsequent decision making by MYA holders, FRBC, MoF and MELP. The delivery agents of the WRP (MYA holders) should conduct Routine Effectiveness Evaluation of WRP projects for at least one year after project completion for the following reasons:

- To answer the question, "are the works still in place and functioning as intended?"
- To determine if remedial work is needed to meet the original project objectives.
- If applicable, to identify specific portions of the site that may need continued routine effectiveness evaluation after one year (up to say three years after original project completion or after completion of any remedial works).
- To identify practices or techniques that need to be evaluated more intensively by government through more focussed and controlled evaluation techniques such as Intensive Evaluation and Operational Techniques Evaluation.

Deliverables:

The deliverable will be a joint MoF/MELP WRP Standards Agreement (Schedule A) that will replace the current draft MoF WRP Standards Agreement (Schedule A) dated June 23, 2000. MoF and MELP staff will produce the document, with input from TREWG, industry and FRBC representatives and specialist contractors. As part of the adaptive management process, a website will be created to display the results of the routine effectiveness evaluation program. The project budget will also include coordination of the project activities and liaison with other agencies/ministries (e.g., MELP, MoF, FRBC, Forest Industry). The development of Standard Agreements will also require field testing, trials and training sessions.

Partners/Linkages:

This project will support the key planning, prescription and works stages of the WRP by finding better ways of meeting goals and objectives, identifying key gaps in understanding by persons responsible for implementing WRP activities, fostering an organizational culture that emphasizes learning and responsiveness, and gaining reliable feedback about effectiveness of WRP projects across the province. This project is linked to the proposed MoF/MELP Standard Operating Procedure project for implementation of Intensive Evaluation and Operational Techniques Refinement studies.

Consequence of Not Funding:

This project is ranked as a high priority. The need to implement a staged and controlled province wide Routine Effectiveness Evaluation Program for the WRP is clearly linked to FRBC's accountability needs identified in the Auditor General's report, "*1999/2000 Report 6: Forest Renewal BC.*" If this project is not funded, FRBC will fall short of its accountability responsibilities.

Timing Constraints:

This project should be completed by early spring or summer next year (2001). It should be completed by **June 30, 2001**.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

This project is estimated to cost $80,000 in 2001-2002 to cover the expenses and of government and industry representatives, and fees and expenses for consultants, during the preparation and review of the deliverable document. We estimate additional funding of $35,000 for enhancements to the evaluation program in 2002-2003.

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	**Other**	**01-02**	**02-03**	**03-04**
$0	$0	$100,000	$50,000	$

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Standard Operating Procedures for MoF and MELP for Intensive & Operational Techniques Effectiveness Evaluation**

Originators:

Name: Glenn Moore, P.Eng. Organization: RTEB, Victoria
Telephone: 387-8331 E-mail Address: Glenn.Moore@gems2.gov.bc.ca
Fax: 387-8624

Project Summary:

This project will provide a "blueprint" for MoF and MELP to help fill the current gaps in FRBC's program of WRP evaluation. It involves the development of a comprehensive, government Standard Operating Procedure for the implementation of a quantitative, effectiveness evaluation program (i.e., Intensive Evaluation and Operational Techniques Refinement) for select WRP rehabilitation treatments, sites or projects.

Status:

This is a new project.

Project Details:

Background

We must encourage innovation and learning through performance measurement of WRP projects, combined with adaptive management. This process is essential for responsible and accountable management of the Watershed Restoration Program (WRP). In the past, WRP projects have been evaluated informally, on an ad-hoc basis, or not at all *(Auditor General of British Columbia, 1999/2000 Report 6: Forest Renewal BC)*. Where effectiveness evaluation is carried out, the results of effectiveness evaluation efforts are not incorporated into a well-defined process of adaptive management for subsequent decision making by MYA holders, FRBC, MoF and MELP. MoF and MELP should conduct specialized studies (Intensive Evaluation and Operational Techniques Refinement) to quantitatively examine rehabilitation treatments in more detail than is possible with a Routine Effectiveness Evaluation Program for the following reasons:

For Intensive Evaluation:

- To answer the questions, "which techniques are working or not working, what are the limitations of treatments with respect to terrain, climate, discharge, gradient, etc., and what techniques work best under specific conditions?" Answers to these questions will assist MYA delivery agents with implementation of more efficient and effective on-the-ground project activities.
- To determine the state of recovery in a treated watershed.
- To determine the effectiveness of individual and multiple component activities (restoration treatments) in achieving the various component objectives.
- To determine long term treatment effectiveness.

For Operational Techniques Refinement:

- To answer the questions, "did a new treatment work, how well did it work relative to other treatments and legislative requirements, and at what cost did it work?"
- To test a new technique, application, or technology in order to quantify effectiveness in achieving restoration objectives
- To determine the relative cost-effectiveness, or in some cases the cost-benefit, of the new technique, application or technology.

Objectives

The primary objectives are to develop:

- a practical, agency-integrated approach to specialized study design (including selection of evaluation variables, sampling methodology and protocols, and analysis and presentation of data);
- guidelines to efficiently and effectively report on the effectiveness of evaluation efforts; and
- a practical process to communicate and pass-on information to decision makers that will guide MYA holders, FRBC, MoF and MELP to make adjustments as needed to WRP processes, practices, and techniques based on new understanding and knowledge gained through quantitative study, statistical inference and experience.

Scope (local, regional or provincial)

It is proposed that MoF and MELP will use the Standard Operating Procedures to implement Intensive Evaluation and Operational Techniques Refinement studies across the province.

Deliverables:

This project will involve the development of a joint MoF/MELP Standard Operating Procedure. MoF and MELP staff will produce the document, with input from TREWG, FRBC representatives and specialist contractors. As part of the adaptive management process, a website will be created to display the results of the Intensive Evaluation and Operational Techniques Refinement effectiveness evaluation program. The project budget will also include coordination of the project activities and liaison with other agencies/ministries (e.g., MELP, MoF, FRBC, Forest Industry) and will include field testing, trials and training sessions in both ministries.

Partners/Linkages:

This project will support the key planning, prescription and works stages of the WRP by finding better ways of meeting goals and objectives, identifying key gaps in understanding by persons responsible for implementing WRP activities, fostering an organizational culture that emphasizes learning and responsiveness, and gaining reliable feedback about effectiveness of WRP projects across the province. This project is linked to the proposed WRP Standards Agreement (Schedule A) project for implementation of a Routine Effectiveness Evaluation Program.

Consequence of Not Funding:

This project is ranked as a high priority. The need to implement a staged and controlled Intensive Evaluation and Operational Techniques Refinement effectiveness evaluation program for the WRP is clearly linked to FRBC's accountability needs identified in the Auditor General's report, "*1999/2000 Report 6: Forest Renewal BC.*" If this project is not funded, FRBC will fall short of its accountability responsibilities.

Timing Constraints:

This project should be completed by the late summer of next year (2001). It should be completed by **August 31, 2001**.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

This project is estimated to cost $75,000 in 2001-2002 to cover the expenses of government and industry representatives, and fees and expenses for consultants, during the preparation and review of the deliverable document. We estimate additional funding of $25,000 for enhancements to the evaluation program in 2002-2003.

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
$0	$0	$85,000	$95,000	$

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Restoration Information and Communications (MOF/MELP)**

Originators:

Names: Brendan Holden / John Mallett
Organization: Ministry of Forests
Telephone 387-6565 & Fax: 387-6445
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

While the objective is technical communication and public awareness this project involves several activities: Increased public awareness of watershed restoration through site signage, public notices and brochures, etc. and technical communication through the Watershed Restoration Bulletin and published reports & handbooks.

Status: Continuing

Project Details:

The Watershed Restoration Bulletin was started as Streamline by MELP and is now a joint quarterly publication featuring watershed restoration articles on both up-slope and in-stream topics. The first objective is diffusion of information on a provincial basis to all restoration practitioners in MOF, MELP and industry through publication of the Bulletin. The second objective is to keep the public informed about BC's Watershed Restoration Program. Both ministries (MOF & MELP) are working for more adequate public awareness of the WRP Program. This has involved signage of project sites and issuing brochures and may involve development of a WRP web page on watershed restoration.

Deliverables:

Publication of the Watershed Restoration Bulletin and greater public awareness of watershed restoration activities

Partners/Linkages: MOF, MELP and Industry

Consequence of Not Funding:

Watershed Restoration Bulletin becomes a MELP publication only and reduced public awareness

Timing Constraints:

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budge		
FRBC	Other	01-02	02-03	03-04
25,00		75,000	75,000	75,000
		MELP $100K		

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Inventory of Non-status Forest Roads**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445
Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

A forest road is considered non-status if it is not permitted. No forest company, ministry or other agency has responsibility for tracking non-status road networks. Presently, there is a lack of inventory information on non-status forest roads, because the MoF's priority for data gathering is currently on Forest Service Roads (FSRs) and permitted roads. The purpose of this project is to develop a framework and to assist ministries and MYA holders to identify, inventory and submit information in a common format for inclusion in a database of non-status forest roads within priority watersheds across the province. In some cases textual information regarding these roads is currently available from FRBC project reports. The inventory data will be captured in digital format and stored in a database for use by FRBC, MoF, MELP, other agencies and the general public.

Status

This is a new project.

Project Details:

Background

Without valid permits on non-status roads to specify user maintenance responsibilities, resources are not allocated by any organization to maintain the integrity of road drainage networks, cuts, and fills, or to close the roads for access management and safety purposes. Many older non-status roads have been left unattended for an extensive period of time resulting in unstable road prisms, uncontrolled road drainage, and sedimentation problems. This situation has resulted in a large accumulation (backlog) of non-status roads that need to be deactivated to prevent environmental damage. Recorded impacts have included damage to water quality, water supply systems, fish habitat, landscape aesthetics, site productivity, private property and utilities, and threat to human life.

Most (if not all) WRP road deactivation projects involve non-status road systems. There are many more high risk non-status road networks located within Coastal and Interior watersheds that need deactivation treatments to protect water quality and fish habitat. For WRP project planning purposes, and for reporting on project work completed to date, it is important to identify, map and track the status of all non-status roads within the highest priority watersheds.

Objectives

The primary objectives are to:

- develop a common framework for creation of a digital database to track the current and future status of non-status roads within the highest priority FRBC watersheds, including their unique identifier, plan location, length, and estimated risk; and
- through MYA agreements, identify non-status roads with priority sub-basins of the highest priority watersheds, to name or number them for identification purposes, and to rank them based on risk to water quality and fish habitat; and submit the digitized information to MOF.

The database could be used to produce plan maps showing the locations of non-status roads for forest management activities, and FRBC project planning and reporting.

Scope (local, regional or provincial)

The project would be implemented for priority watersheds across the province. Once the framework has been developed and data captured the MoF will input this data into its proposed provincial Forest Road Management System (FRMS) database, which is currently under development for capture of permitted and FS road information.

Deliverables:

This project will involve the development of a framework and digital database to track the current and future status of non-status roads within the highest priority watersheds. The database will be stored in a suitable format, and made accessible to FRBC, MoF, MELP and the general public.

Partners/Linkages:

Partners include the forest industry, FRBC, government agencies such as MoF, MELP, and MEM, and other stakeholders such as recreational users, mineral tenure holders, ranchers, and the general public. Linkages to FRBC projects would include any road deactivation and effectiveness evaluation projects within priority watersheds where non-status roads have been identified.

Consequence of Not Funding:

The need to inventory non-status roads is clearly linked to FRBC's accountability needs identified in the Auditor General's report, "*1999/2000 Report 6: Forest Renewal BC.*" If this project is not funded, FRBC will fall short of its responsibilities for proper record keeping of its road deactivation and effectiveness evaluation projects.

Timing Constraints:

This project involves funding on an annual basis beginning in 2001-2002. The priorities for expenditures on the inventory framework for data collection and database development would be ranked on the basis of risk to water quality and fish habitat and regional MYA priorities.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

NA

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	**Other**	**01-02**	**02-03**	**03-04**
		$50,000	$50,000	

FOREST RENEWAL BC

Effectiveness Evaluation Implementation Proposals

To be funded from

Multi Year Agreements

FOREST RENEWAL BC
Effectiveness Evaluation Implementation Proposals

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Intensive Effectiveness Evaluations and Operational Techniques Refinements**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445

Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

This project to carry out Intensive Effectiveness Evaluations and Operational Techniques Refinements to check the efficiency of certain specific restoration activities such as: soil bioengineering, culvert removal, fording techniques, or road maintenance procedures.

Status New

Project Details:

There are some watershed restoration techniques and activities that have been used for the past several years and will need to be evaluated. These evaluations are initiated if Routine Evaluations indicate problems or if different techniques are proposed and need to be tested. The objective of this project is to refine the restoration activities and techniques to make them more effective and cost efficient. Results will be useful / beneficial to MOF, MELP and Industry.

Deliverables:

Better, more effective and less costly watershed restoration procedures / activities / techniques.

Partners/Linkages:

MOF, MELP and Industry

Consequence of Not Funding:

Restoration techniques, or alternative techniques would not likely be tested, refined or improved and we may continue investing funding / resources in unproven or outmoded techniques.

Timing Constraints:

It is planned that these Intensive evaluations be commenced after the evaluation processes and procedures, and adaptive management processes are in place.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
105,000		200,000	200,000	200,000

FOREST RENEWAL BC
Effectiveness Evaluation Implementation Proposals

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: Risk assessment for prioritizing watershed restoration activities

Originators:

Names: Brendan Holden / Bruce MacFarlane
Telephone 387-6565 & Fax: 387-6445
Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3

Project Summary

This project can be used to support decision-making for tradeoffs among stream sites that are considered for restoration. Ultimately, this approach would assist watershed restoration committees, which are charged with the task of identifying all the higher priority work needed to restore watersheds.

Status: New

Project Details:

With the recent change in focus by Forest Renewal BC to fish, fish habitat, and water quality, a demand exists to determine priorities for restoration activities, once a watershed has been selected for restoration. Currently, practitioners in natural resource management rely on a risk-based model for this determination. Under this model, assessment of field conditions helps objectively quantify the risk and, therefore, the tradeoffs for setting a sequence of priority work. While there has been much activity associated with defining the risk of sediment delivery to streams, a commensurate level of effort has not been undertaken for determining risk to fish and fish habitat. In particular, more attention needs to be placed on assessing the consequence part as compared to the probability part of the risk equation (Risk = probability of an event x the consequence of that event).

To carry out this proposal, funding is required to:

1. Coordinate input from various experts in fluvial morphology, fish biology, slope stability, and ecosystem processes;
2. Revue the literature for recent developments in risk assessment of forest activities to fish and fish habitat;
3. Develop a consequence matrix that quantitatively examines the physical and biological factors of fish habitat that afford protection, conservation, or exploitation of fisheries resources.
4. A starting place for these factors would be the FPC CAP. Some factors would include physical attributes such as channel characteristics, channel impact, and changes in channel morphology. Another source of factors for evaluating potential impact to fish and fish habitat would be the proper functioning condition for riparian areas, referred to in the RAPP technical circular. The FHAP could also contribute meaningful biological criteria, with the

intent of deriving a better understanding of fish use in various stream types, and the relationship of these areas to upslope hazards.

To increase the reliability of the risk assessment model, two case studies are proposed, such that the process provides positive contributions to both the planning and evaluation sides of watershed restoration activities, such that the development of the risk matrix is adaptively managed.

Deliverables:

The main output is greater accountability of both the ministries and forest licensees to Forest Renewal BC and WRP

Partners/Linkages:

This project would be integrated between MELP and MOF.

Consequence of Not Funding:

Without funding, decision makers will continue to risk FRBC expenditures on potentially unnecessary work.

Timing Constraints:

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Because this project requires an interdisciplinary team of experts, consulting costs are anticipated to be higher. Costs for the watershed restoration committees would be covered from MYA holders, which is consistent with the current delivery regime for restoration plans.

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
		84,000	84,000	84,000

FOREST RENEWAL BC
Effectiveness Evaluation Implementation Proposals

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Effectiveness Evaluation Training.**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445

Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

Course development to train regional, district and industry personnel in the principles and procedures of Routine Effectiveness Evaluations to facilitate consistent and reliable results.

Status new

Project Details:

Until now, Effectiveness Evaluations have been done on an ad hoc basis as pilot or test projects. The object of the training is to have consistent and reliable evaluations and reports. When the Standards Agreements and standard formats are developed for Routine Effectiveness Evaluations, MOF will coordinate a Multidiciplinary Effectiveness Evaluation Team to delliver EE training to regional Ministry and Industry offices. This must be done to have a consistent data gathering and reporting process.

Deliverables:

Consistent and reliable reporting of evaluation data to the Adaptive Management process.

Partners/Linkages:

MOF, MELP and Industry

Consequence of Not Funding:

If there is no training, the evaluation data reporting will be neither consistent nor reliable.

Timing Constraints:

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget			
FRBC	Other	01-02	02-03	03-04	
		28000	28000	28000	

FOREST RENEWAL BC
Effectiveness Evaluation Implementation Proposals

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Stream Crossing Video and Workbook**

Originators:

Names: Brendan Holden / John Mallett
Telephone 387-6565 & Fax: 387-6445

Organization: Ministry of Forests
E-mail: Brendan.Holden@gems3.gov.bc.ca

Project Summary

To develop a training video and workbook on planning, new (2001) construction, maintenance and deactivation of fish stream crossings to supplement the Stream Crossing Guidebook, developed by MOD, MELP, Industry, and Federal Fisheries.

Status new

Project Details:

A new updated Stream Crossing Guidebook will be implemented in 2001; however, it is felt that a video and workbook would be a beneficial supplement to the Guidebook, to help practitioners understand the principles of fish habitat in relation to stream crossings and culvert replacements. The training video and workbook will address the planning, construction, maintenance and deactivation of fish stream crossings, particularly from a fish habitat and culvert replacement / bridges point of view. It will be utilized by restoration practitioners, forest workers and contractors. It is anticipated that ongoing practices for culvert removal / fording techniques would improve with video use. Cost of the video will depend on the availability of file footage.

Deliverables:

A video and workbook to accompany and supplement the Stream Crossing Guidebook

Partners/Linkages:

MOF, MELP, Federal Fisheries and Industry.

Consequence of Not Funding:

Without a video and workbook, the new Guidebook will be a less effective document; poor stream crossing and culvert replacement techniques will continue, implementation will be less effective and detrimental effects on fish and water resources will continue.

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
		56,000	56000	56000

FOREST RENEWAL BC
HEADQUARTERS RESOURCE MANAGEMENT PLAN

PROJECT PROPOSAL

Project #:
(FRBC will assign)

Project Name: **Intensive Evaluation Framework for Better Classification of Small Streams**

Originators:

Name:	Glenn Moore & Ron Davis	Organization: RTEB, Victoria
Telephone:	387-8331	E-mail Address: Glenn.Moore@gems2.gov.bc.ca
Fax:	387-8624	

Project Summary:

Correct classification of streams is critical for minimizing the effects of land use practices (particularly bridge, major culvert and ford crossings) on stream channels and aquatic ecosystems including fish populations, their habitats, and water quality. This project will involve the development of comprehensive technical guidelines that will provide a process for MYA delivery agents, MoF/MELP, and consultants to reliably assess the likelihood of fish occurrence on small streams less than 1.5 m wide. This project will enable more economical risk management of stream crossings and culvert replacement, particularly where expensive engineered structures are required by Code on 'defaulted' S4 (fish) streams, but where these streams are actually S6 (non-fish), which allows less costly crossings.

Status:

This is a new project.

Project Details:

Background

An important attribute of streams is the presence of fish species. Under the Code, a proponent is responsible for determining whether or not fish use a specific stream reach. To assist in fish-stream identification, the proponent can sometimes obtain existing fish inventory information from the appropriate resource agencies. However, field information across the province on fish populations in streams of less than 1.5 m width is incomplete or non-existent. The gathering of field data is expensive and time consuming, since the data must be collected by properly trained and experienced staff by using appropriate methods and level of effort, and at the proper times of the year. In the case of streams less than 1.5 m wide, and where there is no existing or reliable fish inventory information, many proponents choose to default the stream-riparian class to S4 (fish stream) at sites of proposed stream crossings even though the stream class may actually be S6 (non-fish stream). However, this approach to riparian management of streams less than 1.5 m wide is uneconomical, and has resulted in unnecessary, increased operational costs to treat a risk to fish habitat that often times may not be present.

Invariably, the costs for design and construction of engineered crossings are higher for crossings of fish streams than for non-fish streams. At vehicle crossings on streams that are classified as S4, proponents are required to specify designs and measures (e.g., bridges, or wide arch-type open bottom culverts) that will provide for safe fish passage and protection of fish habitat at the crossing. For S6 streams, the use of a ford or round pipe culvert may be suitable to accommodate vehicle access at a substantial reduction in cost.

Deliverables:

The deliverable will be a comprehensive report on the results of a statistical evaluation of "default" versus "actual" fish streams, to determine both biological and economic factors within which to more efficiently and effectively risk manage stream crossings. The scope of work will include a discussion of evaluation variables that are the best indicators of fish presence, statistical analysis of the inter-relationships of key fish stream attributes, and development of technical guidelines for operational efficiency and cost-effectiveness in crossing of S4 to S6 streams.

Partners/Linkages:

The results of this project will provide valuable input to MYA delivery agents, MoF/MELP and consultants during the prescription phase of WRP road deactivation projects, or culvert replacements (fish barriers) and during the implementation of the deactivation works. The project will also provide technical guidance to forest companies during the planning and design phase of operational forest roads.

Consequence of Not Funding:

This project is ranked as a high priority. The need to treat defaulted S4 streams that are suspected of having marginal habitat will likely preclude the construction of relatively inexpensive, ford type crossings on WRP road deactivation projects. This may delay or cancel the implementation of some projects, particularly on roads in the Interior, where vehicle access must be maintained but where MELP will not currently approve ford crossings. Delay may result in higher FRBC expenditures, to manage a risk to fish habitat that may not be present on S4 defaulted streams.

Timing Constraints:

This project should be completed by early fall next year (2001).

Past Investment and Proposed FRBC Budget (includes 12% administration fee):

This project is estimated to cost $65,000 in 2001-2002 to cover the fees and expenses for consultants during field work, data analysis and reporting stages of the project. We estimate additional funding of $10,000 for enhancements to the framework or guidelines in 2002-2003.

Past Investment (to Mar. 31/01)		Proposed Budget		
FRBC	Other	01-02	02-03	03-04
$0	$0	$65,000	$65,000	$65,000